A Marshall Cavendish Publication in weekly parts

Part 1

THE KNACK

The complete manual of DIY skills, projects and home ideas

ISSUE 2 FREE! INSIDE

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THE KNACK

Contents Part 1

Home designer
Lighting for living rooms 4
You can completely change the character of a room without spending a fortune
Project: Making side lamps

Project
Build a bedhead 10
A flexible design for an original bedhead to liven up your bedroom
Plus: Alternative designs

Repairs and renovations
Facelift for furniture 16
That old chest of drawers can be given a new lease of life by stripping off the paint and waxing the wood
Project: Stencil ideas

Masonry course 1
Basic bricklaying 20
Bricklaying is not as difficult as is often thought. Follow the step-by-step guides
Project: Build a barbecue

Plumbing course 1
Understanding your water system 26
The first part of the plumbing course unravels the mysteries of domestic plumbing systems.

Decorating course 1
Decorating with tiles 30
Tiles are cheap, simple to lay and stunning in their effect
Project: Tile topped work surface

The index
The last two parts of The Knack will form a complete fully cross-referenced index. For easy access to the information in your growing collection, interim indexes will be published to cover each 14-part volume. For quick reference, reminders on what has been covered so far in the volume will appear on the inside back cover.

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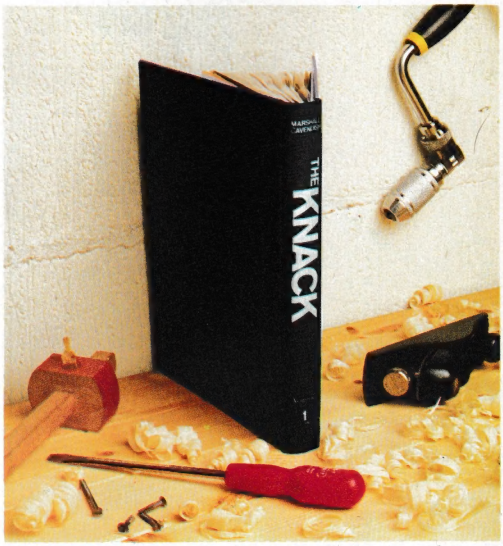

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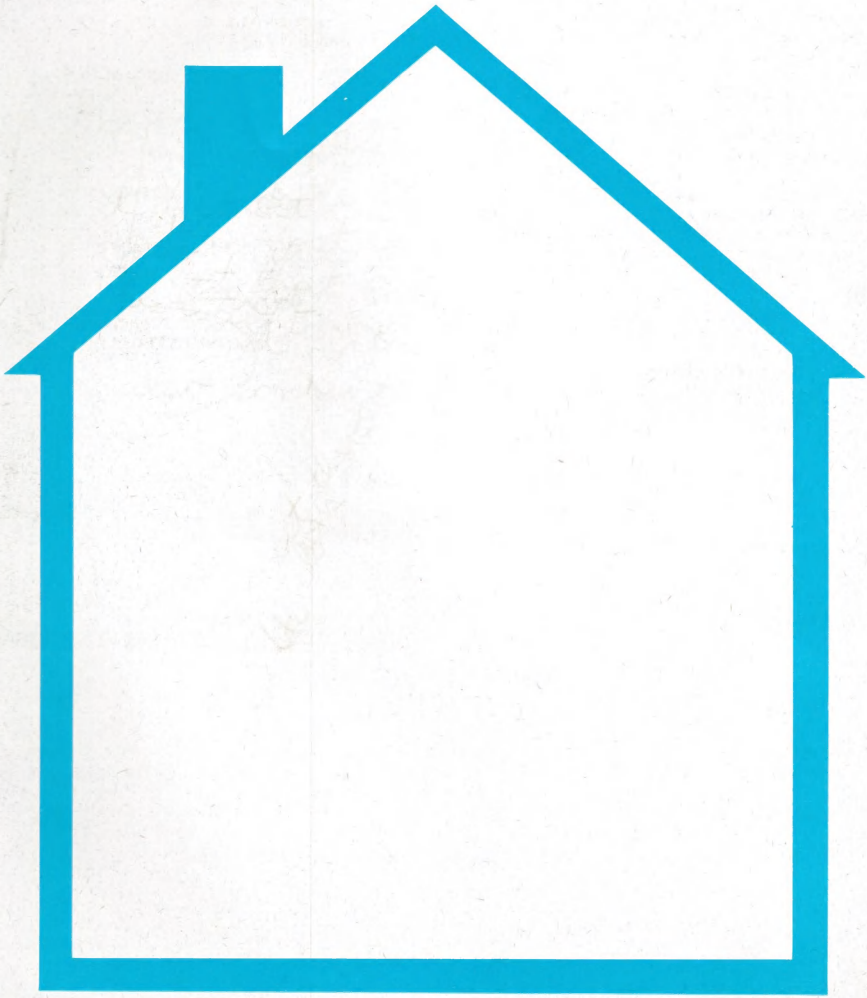
THE KNACK



Using THE KNACK

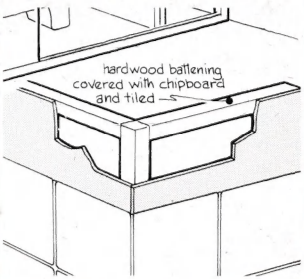
The Knack is designed to be a complete guide to all aspects of DIY, both inside and outside the house.

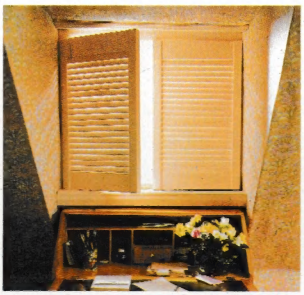
- **It gets right down to basics with eight complete courses covering all the DIY skills you are ever likely to need: Decorating / Masonry / Plumbing / Carpentry / Home electrics / Heating and ventilating / Plastering / Roofing.**
- **It gives you the scope to get real satisfaction from DIY, with practical suggestions for home improvements, exciting and original design ideas and attractive projects—all of which you can tackle with the techniques covered in the skills courses.**
- **It highlights the handy tips that minimize expense and effort and contains all the information that can help you save on materials, tools and hardware.**
- **As the course builds up, extensive cross referencing helps you to find all the skills you need for any particular job easily and quickly.**
- **The Knack is divided into these regular strands and courses to take you step by step through all the various aspects of DIY:—**

Home designer

Use this section as a source of inspiration and ideas to make your home a more attractive and comfortable place to live in.

Every designer article is linked to a practical project which uses some of the ideas discussed in the main body of the feature. The core of these projects is a simple idea which, used in conjunction with the other ideas in the article, will add impact and flair to your designs.





Project

Specially commissioned for The Knack, the Project section offers you a wide range of home improvement ideas. DIY enthusiasts will find plenty to get their teeth into, but most of the projects can be tackled with confidence by the inexperienced home-owner.

All the information you need to know is laid out alongside simple to understand working diagrams—including all the details of the materials you will need.

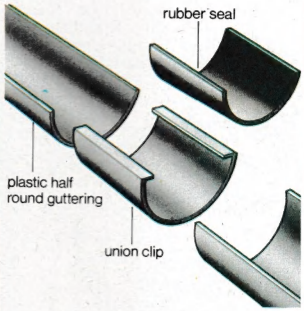
The working drawings give you an overall view of the project, plus all the details essential for a professional finish.

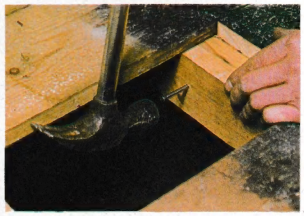
All the projects hinge around a central, flexible idea and the working diagrams show one specific version of the main theme. There are also ideas for alternative treatments enabling you to adapt any project to your own requirements.

Repairs and renovations

Maintenance and repairs are part of the upkeep of any home and The Knack gives you a special section on all those jobs which can cost so much if you call in outside help. It provides a complete reference to handling emergency repairs—plus tips on avoiding future problems.

All the special techniques you need for just about any repair job are covered in simple step-by-step guides, with plenty of detailed instructions and tips—so you can get the job done as fast as possible.

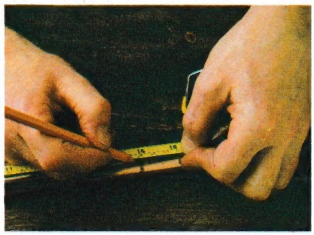


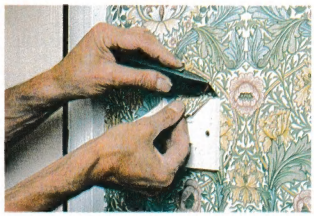


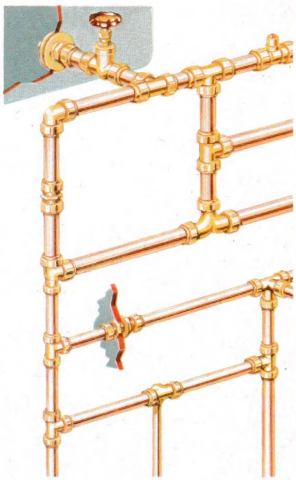
The skills courses

The eight skills courses cover all the DIY skills you are likely to need. Each course has been carefully structured to take you through all the important basic techniques in a logical order. Each technique is laid out in detailed, step-by-step sequences with tips to make the work easier and faster.

You can put your new found skills to work right away. With each new skill introduced, there is a practical project specially designed to make the most of the techniques covered in the course so far. The working instructions for the projects are in the form of clearly set out diagrams and annotation so you can see exactly what is going on at a glance.







Lighting for living rooms

Using light to create atmosphere and set the mood is one of the cheapest and most effective ways to transform a well-decorated, but otherwise lifeless room. The trick is not to go for the most obvious lighting positions

Most of a family's life is spent in the living room—often with several people wanting to do different things at the same time. To cope with a variety of activities, the lighting system in a living room needs to be as flexible as possible.

Making the most of ceiling lights

Usually, living rooms are equipped with a central lighting point in the ceiling. Using a traditional half-shade in this position creates a harsh, monotonous light that does nothing to show off the good points of your room, nor to disguise any less attractive features.

There are a number of ways to avoid this problem without spending a great deal of money. For instance, try extending the central flex and looping it through a ceiling hook—this gives you the scope to hang a pendent light wherever you choose, perhaps over a dining table or in a corner near a sofa.

Downlighters are another good solution for a central lighting point. Basically a downlighter is a fixed, downward-pointing spot, available in either a cylinder-shaped holder or as a special fitting designed to be recessed into the ceiling.

A central group of these recessed downlighters will provide excellent, even floor illumination, although it does mean cutting holes into the ceiling—or having a false ceiling installed—to fit them. Up to four may be wired from the same central ceiling point. They are available with varying beam widths and the wider the beam, the more light is spread over the floor area underneath.

Downlighters are especially useful for visually lowering a high ceiling and, if you can position them more freely, for highlighting coffee tables, plants and ornaments.

Any potential accident spot, such as a step-down between an open-plan lounge and dining area, will need to be constantly lit—a downlighter or spotlight is ideal for this purpose.

Spotlights provide a versatile solution to most lighting problems and if you fit a cluster of them in place of the central light, you can direct the light around the room to where it is most needed.

Spots can be aimed directly at an object for a dramatic effect—and still give an adequate general light over the rest of the room. They can be angled at walls, ceilings or mirrors to make a small room seem larger or a dark room seem brighter. You can direct light over a chair, a table or a section of the floor area where a member of the family normally reads, plays, or sits.

Where extra lighting is needed, spot lights on a ceiling-mounted track give you plenty of flexibility. The aluminium tracks come complete with ceiling mounts and all the electrical conductors are safely concealed inside. You can fit up to four spotlights to a track, providing their combined wattage does not exceed that of the power point.

Probably the cheapest way to soften the effect of a single central light is to use one of the many shapes of large, paper lamp-shades. These create a virtually glare-free, two-dimensional light. Light shining from the hole at the top of the shade bounces off the ceiling, forming a pool of brightness, while light through the shade diffuses gently over the room. However, if the effect is to be maintained the shade will need regular dusting.

Ceiling light systems can be made even more flexible by installing a dimmer switch at the main control. These are easy to fit and are wired in exactly the same way as the switch being replaced. They allow the light to be adjusted from full strength to a cosy glow with many subtle moods in between.

Before installing a dimmer switch to control several lights, check that it has the correct wattage rating. A standard dimmer will usually control up to four 60 watt or two 100 watt bulbs. Fluorescent lights need a special kind of dimmer switch, ideally installed by a qualified electrician. Plug-in dimmers are also available if you prefer a less permanent fixture.

Wall lights and side lights

More flexible than ceiling lights, a combination of wall and portable lights can be tailored to suit all the family's needs.

Wall lamps provide good background light but are best installed when you redecorate, as the supply wire must be chased into the wall behind the plaster. Making a feature of the supply wires—with coloured spiral flexing—is an alternative, decorative way of overcoming any re-wiring problems.

There is an enormous range of attractive wall lights to choose from, to complement all kinds of decor. An alternative, however, is to make use of wall mounted lights which conceal the actual fittings.

Concealed strip lights—in wall units, above and below book shelves, under pelmets or in alcoves—are a subtle source of background lighting and provide an attractive carpet of light down the wall. Book shelves can be illuminated by strip lighting fixed to a batten. If necessary, you can hide the batten by painting or papering it to match the wall.

Mounted strip lights can also be

National Magazine Company

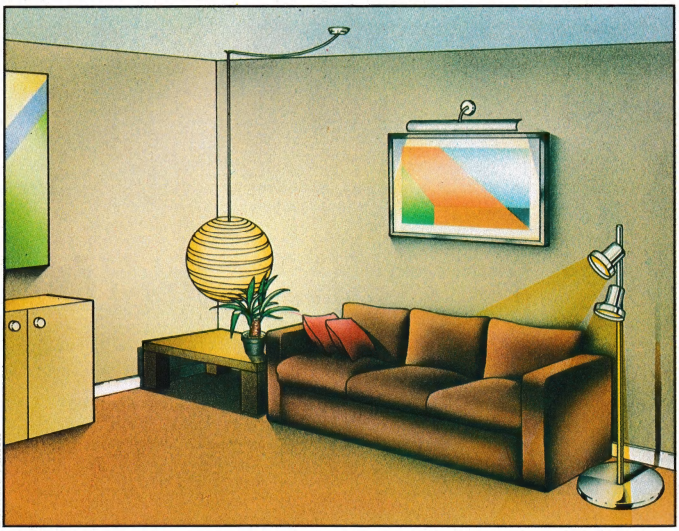
Above and left: *By simply rethinking lighting arrangements, the drab and harsh atmosphere of this open-plan living room has been transformed. Free-standing lamps and a pendent light above the table create soft pools of light, while strip lights concealed in the shelving draw attention to the ornaments*

used to highlight pictures or wall ornaments. Special fittings, which shine light against the wall but shade the direct light from the room, are ideal for this and are available from most lighting shops.

Free-standing table or shelf lamps near the wall have the same effect and, combined with standard lamps, they create a very flexible lighting system. If you want to avoid highlighting the wall, choose one of the low-level lamps with a translucent 'mushroom' shade—these cast pools of warm, subdued light down on to the table for alternating the mood of a room and are perfect for parties. Some of the larger coloured bulbs are decorative enough without a shade.

Portable lights

There is no need to lose the subtle effect of your non-central lighting



Bernard Fallon

Above: *A portable standard lamp with adjustable spotlights, a hooded picture light and a looped pendent give this room a versatile lighting system.*

scheme when one of the family wants to read, sew, or do anything which requires a more direct light source. Portable table or standard lamps can give you a good directional light wherever it is needed but must be positioned carefully to be effective.

A desk lamp needs to shine down on to the work and not upwards into the eyes. The clamp-on type of shaded spotlight is ideal, and has the added advantage that you can move it around the room and clamp it on to any suitable edge or shelf.

Standard lamps can also be moved around easily. The kind with several adjustable spotlights on an upright base are the most versatile. Most are also adjustable for height.

Below: *A track carrying spotlights used to good effect to light a fairly large room. The light behind the sofa adds a dramatic flare and breaks up the linear pattern of the wallpaper*

Remember that trailing flexes can be hazardous, so standards must be sited as near to a plug socket as possible. Child-proof sockets and safety plugs are sensible deterrents to children poking objects into sockets.

Lighting for dining

If you have open plan living and dining areas, it is often desirable to 'lose' one area of the room while using the other. Separate lighting systems for the living and dining sides of the room are the simplest solution, and a rise-and-fall pendant light sited directly over the dining table is ideal.

This creates a relaxed atmosphere and concentrates light on the table setting and the food itself. During the day, the rise-and-fall pendant can be raised to the ceiling to put it out of a child's reach.

The regular handling of pendant

Above: *Highlighting a major feature of the room such as a plant or picture has a stunning effect. In this case a bright spot has been set below a vase of dried grasses*

light shades means that they are likely to get dirtier than most. Acrylic shades should be washed in warm soapy water and sprayed with an anti-static to prevent dust settling too quickly. Fabric shades need only be lightly brushed to remove dust. Dirty marks on cotton shades can be removed by rubbing with dry bread.

Candles are the simplest and one of the most attractive ways of illuminating a dining table—their warm and soft light creates a romantic, friendly feeling. A wide variety of shapes and sizes is available and you can always make your own. All kinds of unusual holders are possible: earthenware

Elizabeth Whiting

Above: *A couple of side lights and two ceiling spots provide all the light needed for informal entertaining in this room*

bowls, brandy goblets, egg cups—in fact anything you like.

Candle-making kits come complete with instructions and many colours of wax, some of which are even delicately perfumed.

Unusual lighting

There are some most unusual ornamental lights readily available, such as the luminous, oil-in-water towers. Like a kaleidoscope, these constantly change shape within their container and at the same time illuminate a corner of the room. Obviously, these will not blend in with every living room and are not to everyone's taste, but they are a good example of the exotic dimensions lighting in a living room can take.

For a completely different effect, you could choose an antique lamp, powered either by oil or electricity. Original antique lamps will be expensive but there are many attractive reproductions available. Even the ordinary, camping paraffin lamps can be brightly painted to blend in with the colours of a living room. They are cheap to run and provide a gentle light which is adequate for reading by if the lamp is properly positioned.

Oil and paraffin wall lights are also widely available. Although there is usually some smell when the lamps are burning, they involve none of the fuss of rewiring and consequent redecorating—they need only be screwed onto the wall. And, of course, they add an attractive, old-fashioned feature to the appearance of the room.

Choosing bulbs and shades

The right bulb or shade makes all the difference to your lighting: choosing different bulbs or a smart new shade is an inexpensive way to brighten up an existing scheme.

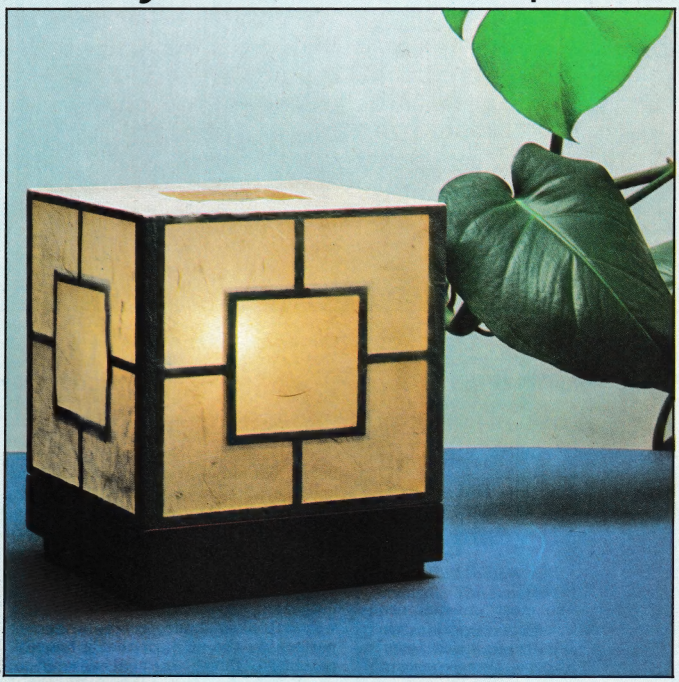
Shades need some careful thought before you buy—it is important to try and see a shade in the shop actually in use over a lighted bulb. This is the only sure way to see what kind of light the colour and texture of the shade is going to create. The depth of colour can be very deceptive and you may find, for example, that an open-weave basket shade creates a strong pattern on the wall, or that a heavily patterned fabric is concealing too much light for your needs.

There are some commonsense points to bear in mind when buying bulbs—the basic one is to make sure that the wattage is not too high for the shade, to avoid overheating. Besides the usual household filament bulb, there are now many different types and shapes designed for special fittings, so you may need to check with the shop that you are buying the right one. There are mushroom shapes for use with shallow fittings, a large range of reflector lamps for spots and down-lighters and all kinds of interesting ornamental bulbs for wall bracket lights.

Coloured lightbulbs can be useful too, in the standard shades of blue, red, yellow, green and pink. A simple way dramatically to change the mood in the living room, they are especially good for party lighting.

Coloured light bulbs look best when they are not used as a main light source. And it is generally true that green is relaxing, that red acts as a stimulant and that blue is a rather clinical colour.

Make your own side lamps



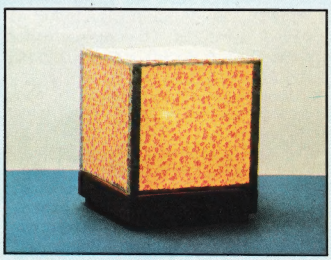
Gavin Cochrane

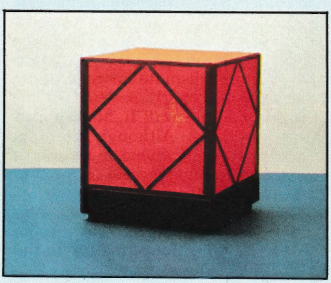
Decorative lamps add interest to any room but can be expensive if you buy the mass-produced variety. Their purpose is to add atmosphere and a pleasing light to the room—but not necessarily to provide a strong illumination.

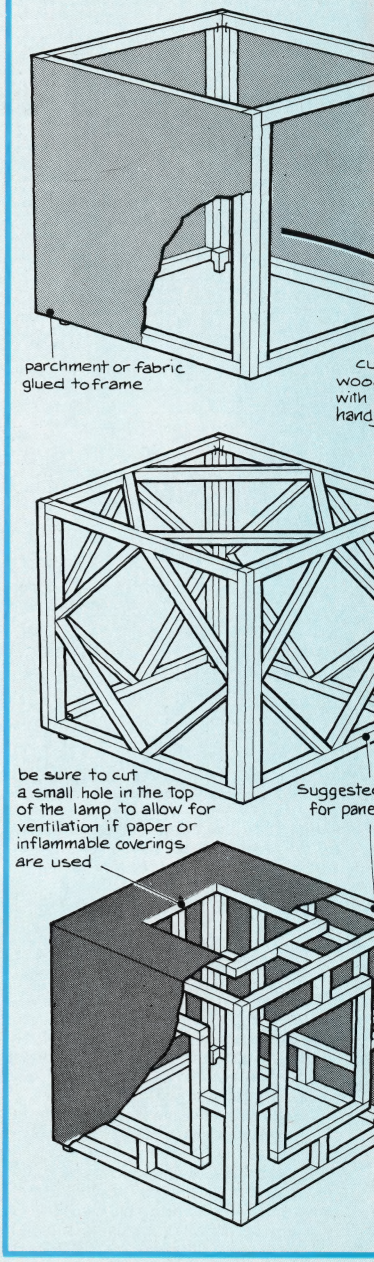
The designs for the cube lamps opposite and the simple bottle lamp can be put together easily and cheaply —you can modify the exact design to suit your own decor.

The cube lamps are built from inexpensive balsa wood frames with a base made from a short length of hard wood which can be varnished or painted. The covering for the frame can be any material, such as parchment, above, (available from some stationers) or fabric, right. Take care not to make the cubes too small and use a low wattage bulb (not more than 60W) or there could be a risk that the covering will scorch or even burn.

If you use very thin tissue paper, cut a hole in the top surface of the cube so that heat from the bulb can escape without scorching.



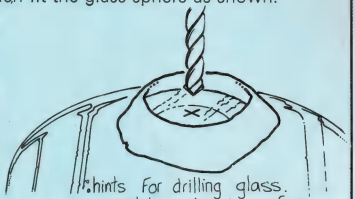




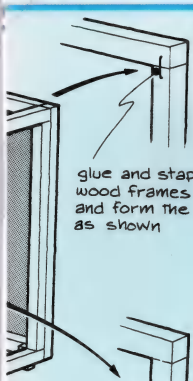
Lamps from storage jars

To make the bottle lamp in the picture you need a brown glass storage jar (obtainable from most hardware shops) and a small glass sphere (obtainable from florist shops for covering small plants).

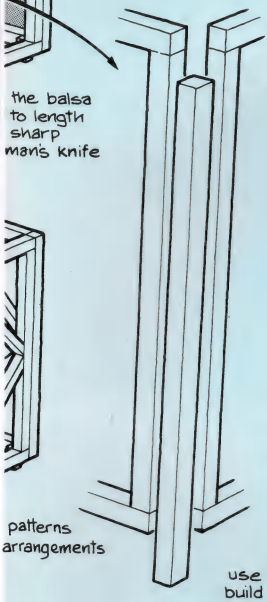
Drill a hole in the side of the glass jar for the flex and fix a large bulb socket in the base with a generous daub of plasticine. Insert an upward-pointing spotlight then fit the glass sphere as shown.



hints for drilling glass.
- scratch mark onto surface
- make crater with plasticine
- fill with light machine oil
- use hand drill and sharp bit



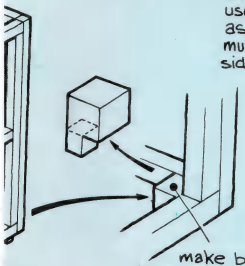
glue and staple the balsa wood frames together and form the basic cube as shown



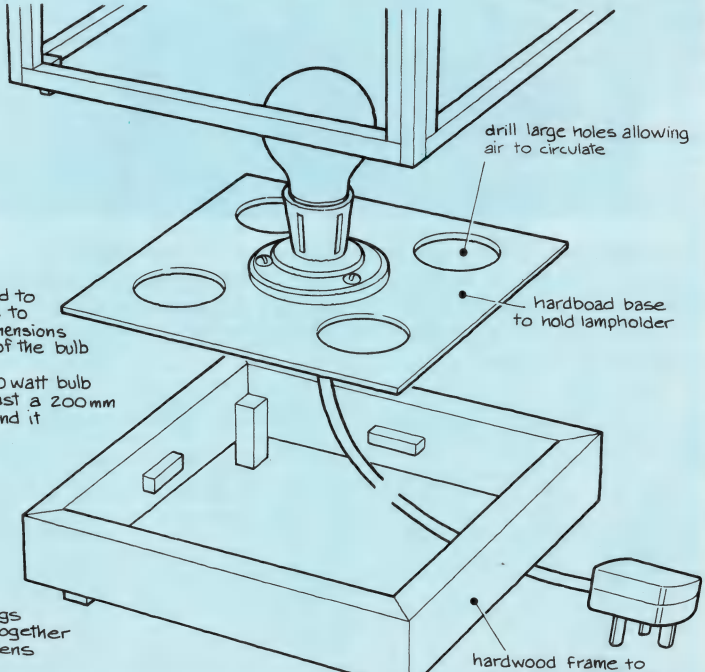
the balsa to length sharp man's knife

patterns arrangements

use balsa wood to build the frames to suit your own dimensions and the wattage of the bulb used.
as a guide a 60 watt bulb must have at least a 200mm sided cube around it



make balsa wood pegs to hold frame and cube together from offcuts of side battens



drill large holes allowing air to circulate

hardboad base to hold lampholder

hardwood frame to suit dimensions of cube

Custom-built bedhead

Jerry Tubby

You can build this stylish bedhead in less than a weekend for far less than the cost of the mass produced variety. The design is highly flexible so you can adapt it to fit any size of bed—or any style of bedroom

This fitted bedhead is an attractive, easy-to-build, piece of bedroom furniture. The hinged side units are designed to hold an alarm clock, books or tissues and to incorporate lights and stereo speakers—exactly where you want them. By day, the units fold back against the wall, space saving and unobtrusive. By night, they swing round to place everything within easy reach.

The foam-padded centre section can be fitted to most beds, double or single—simply alter the stated dimensions to suit your own needs. Once in place, it forms a comfortable, colourful headrest.

Simplicity is the key to the design. The whole unit is made of laminated chipboard, one of the cheapest materials available. Once cut, each piece screws and glues together without any need for complicated woodworking joints. And the smooth finish of the plastic laminate means there is no need to prime it before painting.

The bedhead is held to the wall by screws and wall-plugs. Providing your bedroom wall is strong enough to take these types of fixing, you should have little trouble fitting the unit. And, because only the centre section is fixed, permanent marking of the wall is kept to a minimum.

All the instructions for building the bedhead are given in the accompanying diagrams. The dimensions shown in the diagrams will build the unit shown in the picture above, but you can vary them to suit your own requirements.

Materials

For an average double bed you will need at least 1.6m² of 16-20mm chipboard. However, you may have to buy more if you modify the design in any way or if you have a wide bed.

The centre section, which holds the foam head block is backed with 7mm plywood. Match up the dimensions of this section to the width of your bed to work out how much plywood to buy. The same goes for the foam padding—this time adding 6mm all round to the basic dimensions. By cutting the foam block slightly bigger than the retaining frame, it is compressed and held firm without glue.

This makes it easy to remove for cleaning.

On the side sections the backing speaker panels are made from 3mm hardboard (buy at least 0.5m^2).

The light panels are made from sheet perspex, 279mm x 203mm x 3mm, held in place with magnetic catches (2 per panel). Your local stockist should be able to cut these to size. You need about 4m of 12mm battening to line the frames and hold the speaker and light panels.

You need steel chipboard screws: sixty 40mm x No 8, thirty 25mm x No 6 and a dozen 60mm x No 12. Buy plenty of 19mm panel pins and four 50mm brass hinges.

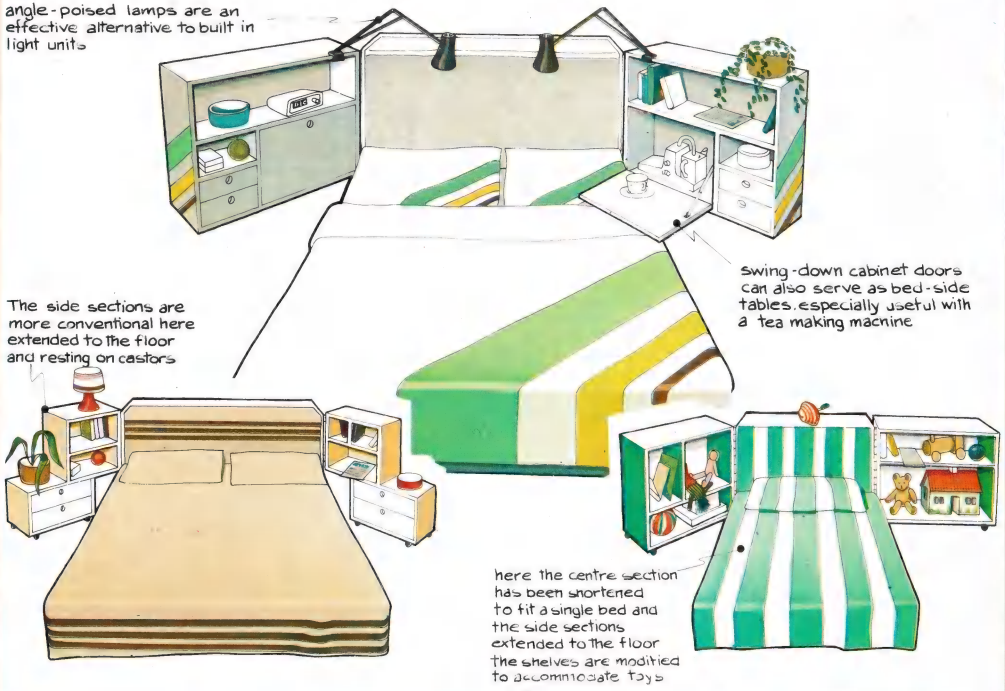
It is a good idea to match the covering material of the headrest to the bed cover. There is no need to make a fitted cover for the foam block, simply stretch the material taut and pin and sew it firmly to the back.

You should be able to complete the construction work in a weekend, and get the first coat of paint on. Be sure to roughen up the surface of the coated chip board with glasspaper to provide a good base for the paint to key on to. Use at least three coats of paint to get a tough, hardwearing finish, sanding down lightly in between each coat.

Suit yourself – alternative designs

The basic design of the bedhead is extremely versatile and can be adapted to suit any kind of bedroom. The swinging side units can be made in any shape you care to think of—and the cupboards and shelves within them can be arranged in almost any fashion—the units need not even be symmetrical. It all depends who sleeps on which side of the bed and how much storage space is required.

Remember though, that the longer and wider you make the side units the greater the strain imposed on the supports and hinges—especially if you plan to use the shelves for heavy items such as books. To strengthen the overall design use extra hinges and heavy duty wall plugs to secure the assembly to the wall. Alternatively extend the side units to the floor and mount them on castors, which will then take most of the weight. The three suggestions below show just a few of the many variations on the basic theme and by choosing natural wood rather than coated chipboard you can achieve almost any finish.



Advertising Arts

Workplan

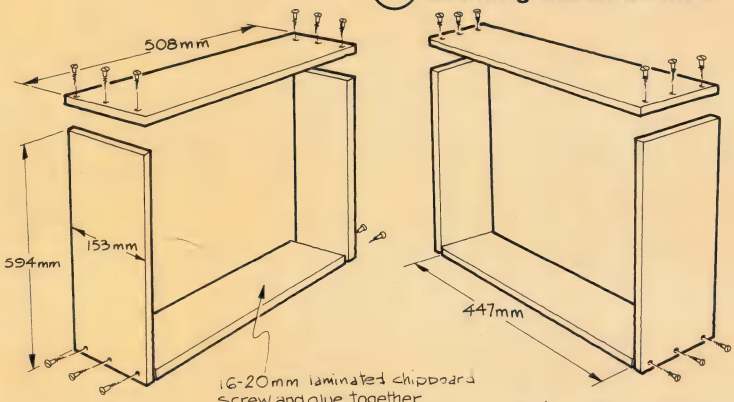
The bedhead is built using a simple box frame construction without the need for complicated joints involving intricate saw cuts. However, to avoid costly mistakes there are a few important points to remember.

It is essential to pre-drill all the screw holes in the end grains of the chipboard or there is a danger that the board may split as the screw is driven home. Use shankless screws, specially designed for chipboard.

To make the joint extra strong, use an epoxy based impact adhesive as well as the screws.

To get a really accurate square corner on the boxes, cut the chipboard a few millimetres over length for the top and bottom components and plane the overhang right down flush with the side panels.

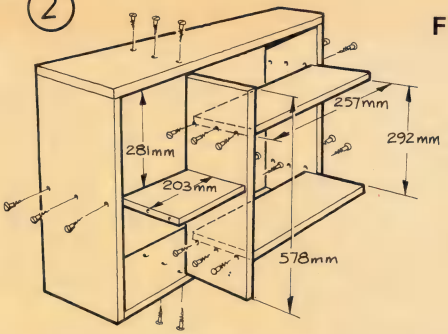
1 Building the side units



16-20mm laminated chipboard screw and glue together as shown.
screw size 38mm x 6
pre-drill all holes-2mm thread hole, 4mm shank hole

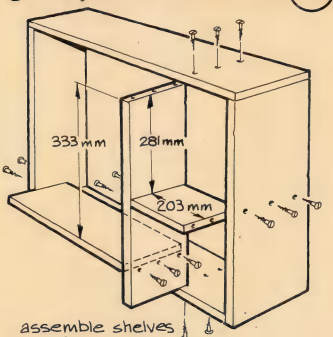
Note: all screws are countersunk all end grain and screw heads showing should be filled.
give at least two coats of paint and lightly rub down between coats with wet and dry paper.

2 Fitting the partitions

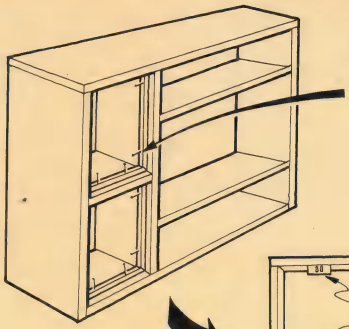


assemble shelving into right hand unit as shown. gluing and screwing all joints.
screw size 38mm x 6

3

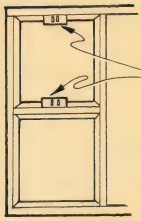


assemble shelves to left hand unit as shown. use same glue and screws as right hand unit.



using 19mm panel pins nail inset frame into speaker and light apertures. inset 7mm from the front. Use 12mm sq. batten

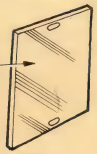
4



cut notches for magnetic catches into inset frame at these points fix catches flush with frame

Installing the speakers

glue magnetic catch plates on as shown



3mm perspex

5

3mm hard board

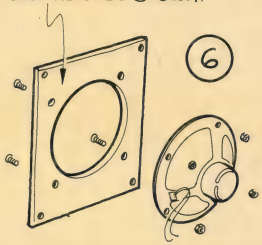
hole for 152mm speaker use a coping saw to cut the round hole

3mm hard board

hole dia. 127mm

cut out infill panels to size of speaker/light apertures to give flush fit with outside of cabinet

fix chosen speakers to mounting boards with countersunk bolts and nuts as shown.



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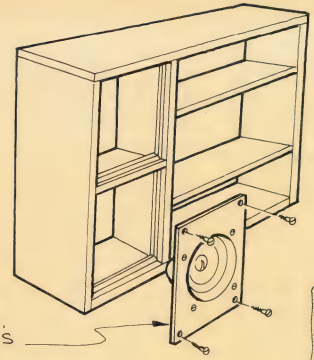

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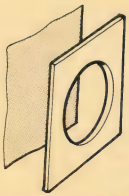
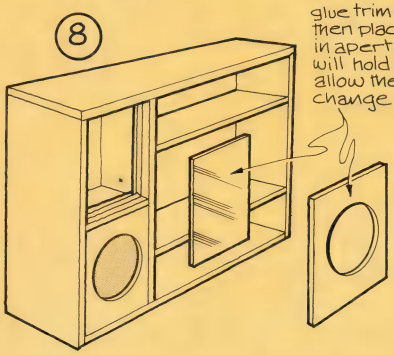
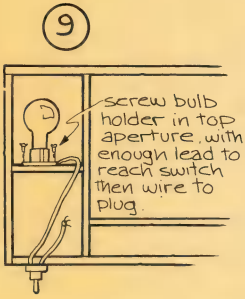
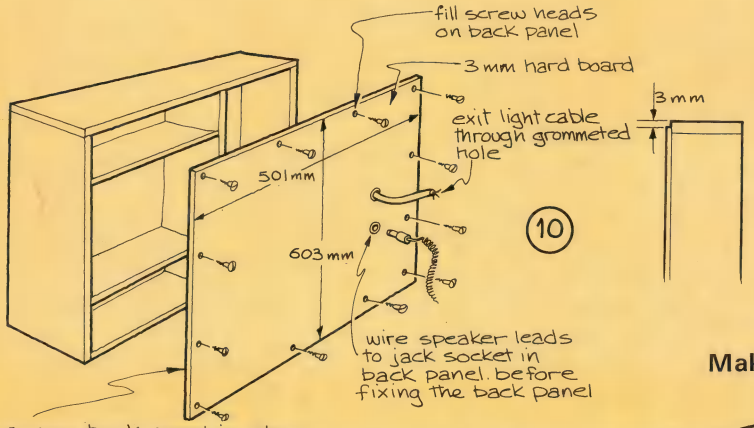


screw speaker panels into cabinet, glue black speaker cloth over front. Then glue front trim panels in place.

Fitting the lights





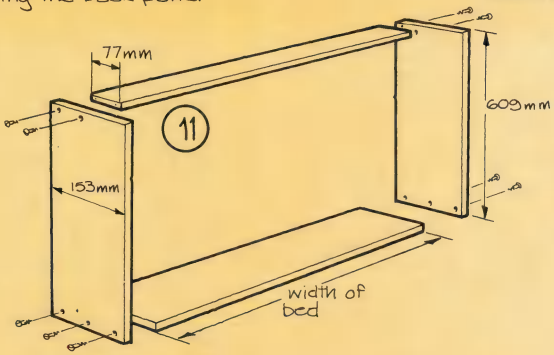


screw back panel in place ensuring it is inset 3mm all round from outside size of cabinet.
screw size 25mm x 6

Note: pre-drill all screw holes

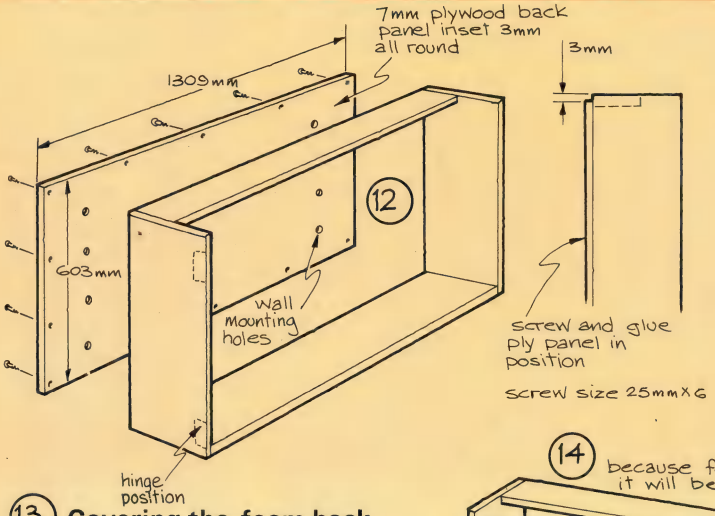
Note: fill all screw heads joints and cut edges after assembly.

Making the centre section



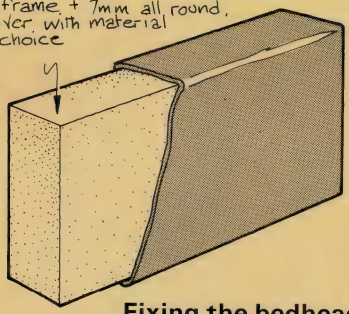
all joints to be screwed and glued

screw size 38mm x 6

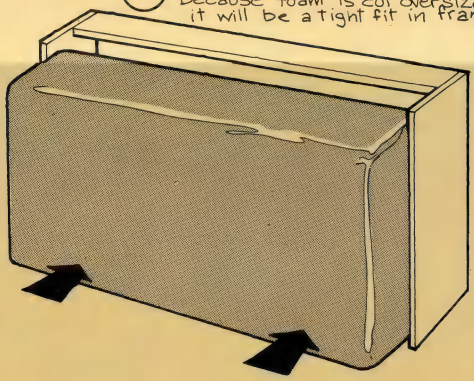


13 Covering the foam back

obtain foam rubber block, cut to dimensions of inside of frame + 7mm all round, cover with material to choice



14 because foam is cut oversize it will be a tight fit in frame



Fixing the bedhead to the wall,

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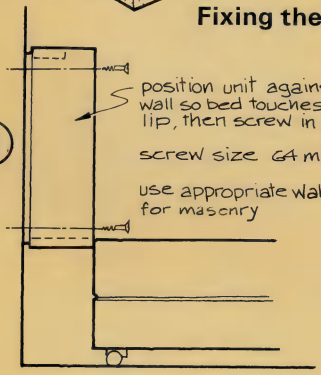

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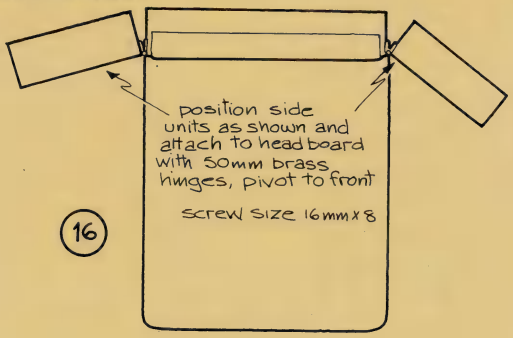


Facelift for furniture

That shabby old chest of drawers can be transformed simply and cheaply by stripping off the old paint and refinishing the wood in an up-to-date, eye catching style

By stripping old furniture down to the natural wood you can ensure a smooth surface—free of bumps and blemishes—which can then be polished, varnished or even stencilled for a completely new look

Make sure, though, that you know what finish you are stripping. It could be one of several—paint, polish, lacquer or varnish—and they all need different treatments.

Stripping paint

Paint on furniture can be removed either by immersion in a caustic bath—a job for a specialist—or by hand, using a chemical paint stripper. Hand stripping usually gives the best results, as it adds an extra lustre to the bare wood: consider the caustic bath as a last resort—only to be used if the work proves impossibly hard.

Equipment

To strip paint by hand, you need a supply of proprietary paint stripper. Available in either jelly or liquid form, it is more economical to buy it by the gallon than to opt for one of the smaller cans. The back of the can should tell you what to wash the stripper off with once it has soaked in—either water, methylated spirits or turps substitute.

To apply the stripper, you need rubber gloves and an old 25mm or 50mm paintbrush For peeling away the softened paint, use a stripping knife and a moulding scraper or coarse wire wool. Put the shreds—which will be caustic, and therefore dangerous—in a jam jar or an empty paint tin.

For cleaning and finishing, make sure that you have a supply of coarse wire wool and fine and medium grade glasspaper.

Method

If you are working indoors, ensure the room is well ventilated before you start—paint stripper gives off unpleasant fumes. Put down some newspaper or an old dust sheet to protect your floor and furnishings.

On a chest of drawers start with the drawer faces themselves, removing handles and key escutcheons where possible. A dab of paint stripper, left to soak for a few minutes, will help loosen stubborn screws.

Wearing rubber gloves, pour some of the stripper into a jar and start brushing it on to the paint. Work the stripper into all the cracks and crevices with a brush making sure none of the paint is missed.

Having covered a drawer or the equivalent area, leave the stripper to act for several minutes. When the paint starts to bubble, remove the top layer with a stripping knife or a moulding scraper and scrape the shreds straight into a container.

Continue this process with each layer of paint—sometimes there are as many as five or six on an old chest of drawers—until you reach the wood. You will need several applications of stripper. If you find any corners difficult to reach with a stripping knife, use the moulding scraper instead.

When all the paint has been stripped off, the next step is to wash down the wood. This will help to remove any remaining debris and also neutralizes the stripper.

Follow the manufacturer's recommendation on what neutralizer to use with your particular stripper. Soak it into a hand-sized wad of wire wool and thoroughly rub over the stripped surfaces until they are as clean as you can get them.

Finally, when the wood is dry,

Right: *This chest has been totally transformed into a beautiful piece of furniture, by stripping and then polishing with homemade beeswax polish*

Above: *A neglected, old chest covered with dirty, pitted paint can easily be stripped down to the natural wood and given a new finish*

glasspaper it down to a smooth finish. Use medium grade paper to work out the deeper scratches, then go over the whole surface with a fine grade. Rub in the direction of the wood grain when using wire wool or glasspaper.

Stripping polish

If the chest of drawers is polished you need to know which type of polish has been used before you can remove it successfully.

French polish gives a fine, mirror-like surface which is very delicate and easily marked by heat or liquid. The surface shine is the result of the polishing techniques rather than the ingredients of the polish.

French polish can easily be removed with methylated spirits. Wipe it on generously and then leave it for a few minutes. When the polish has softened scrape it off, first with a scraper, then with fine wire wool soaked in methylated spirits. When the wood is dry, glasspaper it down to a smooth finish.

Wax polish and oily surfaces can be removed by rubbing with fine steel-wool soaked turpentine or turps substitute. Dry with an absorbent rag and repeat the process until you reach bare wood.

If you are not sure what sort of polish is on your furniture, choose a small, unobtrusive part of the surface and rub real turpentine on the spot with a soft cloth. This will remove dirt and wax or oil finishes and quickly reveal bare wood. If there is polish left after applying the turpentine, rub on a little methylated spirit—if the surface has been French polished it will go soft and sticky.

Varnished and lacquered finishes

If your chest of drawers is more than 30 years old and is varnished, you are dealing with oil-based varnish. This is made from resins dissolved in oils and solvents and is quite different from modern cellulose and polyurethane varnishes.

The cleanest way to remove oil-based varnish is with a scraper. Tilt the scraper away from you and push it along the grain of the wood, working away from your body. Never use it across the grain.

1 *Remove the handles from drawers if possible. Pour some stripper into a jar and apply it to the wood. Work it well into any cracks*

2 *Leave it until the paint starts to bubble then, with a stripping knife, remove the top layer of paint. Scrape the paint shreds into a tin*

3 *Use a moulding scraper to get the paint out of difficult corners and continue applying stripper until all paint has been removed*

4 *Rub the bare wood with coarse wire wool dampened in turps substitute or water. When dry, rub with glasspaper to smooth it*

To remove polyurethane varnishes use paint stripper. Cellulose-based varnishes can be removed with paint-stripper, acetone, cellulose thinners, ammonia, caustic soda or turpentine. You may need to test small areas first to see which works best.

Doing repairs

Once you have stripped off all the old paint, you may find that various faults show up and that repairs are necessary before the new finish can be applied.

If the back of the chest of drawers is weak, nail some new battening on.

Any weak joints should be glued, pinned, then held in place for several hours—either with string or in a clamp. Make sure that the corners of the chest of drawers are protected from the cutting action of the string with some paper or a piece of wood.

Cracks and holes must be filled with plastic wood or a commercial non-shrinking stopper—both are available from DIY shops. You can also buy coloured fillers and stains to match the natural colour of the wood. Level filled holes with fine glasspaper. Large holes, greater than the size of a keyhole, should be plugged with a piece of similar wood cut to shape.

Make sure that the grain of the plug goes the same way as the rest of the surface, then glue it in place with a suitable adhesive.

Finishing—with polyurethane

Polyurethane varnish gives bare wood a lustrous, hard-wearing finish which is easy to clean and maintain. As well as clear varnish, a wide variety of colours and natural wood shades are available. The clear varieties come in matt or gloss and these can be mixed.

Polyurethane can withstand heat without marking, though intense heat may eventually damage the wood underneath. It is important to let the polyurethane set: with some varieties it can take up to two weeks to achieve maximum hardness.

Apply the varnish directly to the sanded wood with a paintbrush. Because the varnish must be applied in coats, it is a good idea to dilute the first with white spirit so it soaks in and seals the wood. When the first coat is dry, lightly rub it down with fine glasspaper before applying the next. Subsequent coats can be diluted in the proportion of one part white spirit to three parts polyurethane to give thinner coats which will brush on more easily.

Before applying the coloured variety apply one coat of clear polyurethane to seal the wood or you may get a patchy effect. For a matt finish, apply a final coat of clear, matt polyurethane after the coloured coats.

Finishing—with wax polish

Wax polish can either be used in conjunction with polyurethane, or by itself as an alternative finish. Although wax gives a warm, mellow look to the wood, it has hardly any resistance to heat and marks easily—so its use should be confined to more decorative furniture.

With polyurethane, use a proprietary, white wax polish. After the final coat of varnish has dried, rub over it lightly with a very fine (0000) grade of wire wool. Having brushed away the dust, rub in the polish with a coarse rag to give an even, matt sheen.

Finally, buff up the surface with a fine cloth. Successive layers of polish, built up at the rate of one every two days, will deepen and harden the finish.

For a pure wax finish, you can make up your own beeswax polish. For this you need pure beeswax—available from hardware shops—turps substitute and a glass jar.

Grate the beeswax with a cheese grater and put it in a jam jar. Pour in just enough turps to cover the wax.

Stand the jar in a pan of very hot water and stir until the mixture melts and forms a thick paste—on no account expose the jar to a naked flame as the turps substitute is highly inflammable.

Dip a clean rag in the wax and rub the mixture into the clean wood surface, taking care to spread the wax evenly. Apply enough wax to soak in to the grain but avoid leaving any proud of the surface.

When the wax has hardened completely—in about an hour—buff up the surface with a fine cloth.

5 *Grate the beeswax, using a cheese grater, to help it melt. Then put the wax in a jam jar and add enough turpentine to cover it*

6 *Stand the jam jar in a saucepan of very hot water and then stir the mixture until it all melts and forms a thick paste*

7 *Put some of the beeswax polish on a rag and rub it into the surface of the wood. Finish it off with a dry, clean cloth*

8 *If using a polyurethane finish, this can be applied directly on to the stripped wood. For the first coat, dilute the varnish with white spirit*

Stencil magic

Bernard Fallon

Above: *Stencil kits, which contain sheets of designs and a sharp knife for cutting them, are available from art and craft shops or stationers. Apart from the stencil kit, you will need newspaper to protect the floor, sticky tape or drawing pins, chalk, a palette knife or blunt kitchen knife, cardboard, a stencil brush (available from art and craft shops), small cans of gloss or enamel paints and white spirit. Make sure you gather all these materials together before you start*

Above: *A dark background shows off brightly coloured stencils to the full*
Below: *More subdued designs add a touch of prettiness to this cupboard*

Ray Kathorne/Sunday Times

How to stencil

Cut out the stencils on a flat surface such as a board, securing them with tape or drawing pins before you begin cutting out the patterns.

If you want to stencil a group of designs, arrange the stencils in patterns until you find an arrangement that you like. Lightly chalk in the pattern to get an idea of how the finished design will look.

Mix your chosen colours with a knife, using a sheet of cardboard as a palette. Fasten the stencil to the wood with clear tape, rub off the chalk and use the stencil brush to daub paint through—or if the area of the stencil is fairly large use a spray can.

With practice, you can grade colours by lightly applying a contrasting colour over the first colour at the edges of the stencil. Wait until the paint is almost dry before painting adjacent designs or you may smudge the first ones. If you make a mistake, the paint can be removed with white spirit while it is still wet.

When you have finished, clean each stencil by placing it flat on some newspaper and wiping both sides with a rag dampened in white spirit.

Basic bricklaying

● The basic tool kit ● Mixing mortar ● Planning a small project ● Cutting bricks ● Handling a bricklayer's trowel ● How to lay bricks quickly and accurately ● Turning corners

Although there is no need to collect a full set of bricklayer's tools just to build a simple project, a few are essential and will stand you in good stead later on.

Bricklaying trowel: absolutely vital for spreading the mortar, these are available in both right- and left-handed forms.

Spirit level: another essential tool, make sure that you buy the 1m bricklayer's level.

Ball of twine: for setting out your project.

Shovel: for handling and mixing the mortar.

Bucket: for carrying materials.

Brick hammer and bolster: for cutting bricks.

Measuring tape: for checking, as the work proceeds.

Materials

For simple projects, there is no need to go into the relative advantages and disadvantages of different types of bricks. Simply choose a brick which matches the colour and texture of your surrounding brickwork from the local builders merchant.

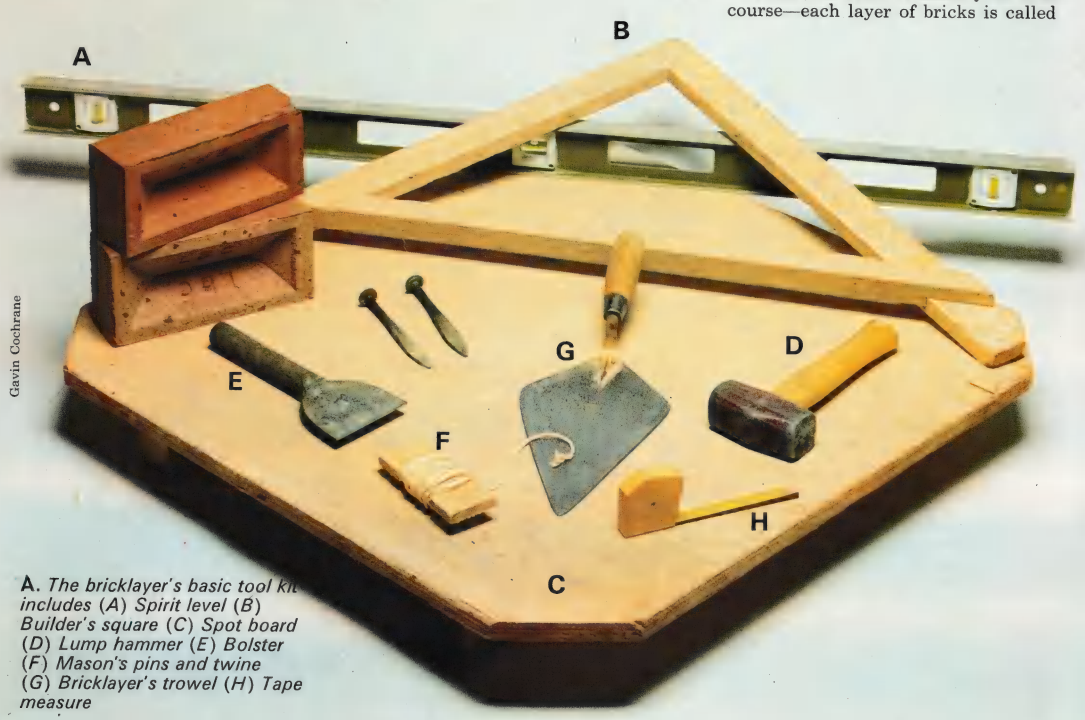
Always buy a few more bricks than you need: some may get damaged in transit and others are certain to be spoilt when cutting them.

As well as bricks, you need the materials which go to make up mortar —fine sand and cement—plus a square of blockboard or similar material, to carry the finished mix.

Setting out

It is essential to make sure that the main wall in any project runs in a straight line and remains level throughout—you can do this by constructing a marker line, to indicate the edge of the proposed wall. First, tie a length of twine, at least 1m longer than your proposed wall, around a brick. Place the brick on-site at one end of the line of the wall: put two others on top to weight it, then stretch the twine out in the direction of the wall. Finally, tie the twine to another brick, weight it and pull the line taut. You should now have an arrangement similar to that shown in fig. 1. The main wall of your project can start anywhere along it.

When you come to mark your first course—each layer of bricks is called



Gavin Cochrane

A. *The bricklayer's basic tool kit includes (A) Spirit level (B) Builder's square (C) Spot board (D) Lump hammer (E) Bolster (F) Mason's pins and twine (G) Bricklayer's trowel (H) Tape measure*

a 'course'—your marker bricks will be laid to one side of the line, as close to it as possible without actually touching.

On a small project, there will be no need to set out the walls which run at right angles to the main wall: you should be able to judge the angles closely enough using the spirit level as a straight edge. On larger projects, where it is important to get corners absolutely square, more accurate techniques must be employed. These are covered further on in the masonry course.

Mixing the mortar

You can mix the mortar on any clean, hard surface near the site. Start by thoroughly mixing four shovelfuls of sand with a shovelful of cement. Turn the mixture over with the shovel until it is thoroughly mixed.

Next, mix up some clean, soapy water, using washing-up liquid. The soap acts as a plasticizer, binding the mortar and keeping it malleable when you come to trowel it. Form a crater in the mortar mix, then add a little of the water. Turn the mix over carefully, adding more water as you go, until you reach a creamy consistency—wet, but firm. Finally, transfer the fresh mortar to your spotboard and place it next to the baseline.

Simple bonding

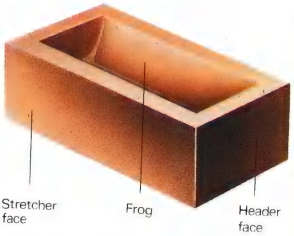
In order to create a rigid structure and to spread the load on any one point, bricks are laid so that they overlap one another or are *bonded*. The simplest and most common bonding style is the *half-bond* or *stretcher bond* (fig. 17). With this arrangement, the bricks in any one course overlap those above and below by half a brick's length.

Always work to a pre drawn bonding pattern if you try to work the pattern out as you go along, you are certain to become confused.

Gauging

How successful a brick structure is depends a great deal on the continuity of its size or *gauge*. This not only applies to the bricks themselves, but also to the mortar joints between them. The ideal width of a joint is 10mm. Although you may not be able to achieve this on your first course, great care should be taken on subsequent courses to get as close to this as possible.

On the first, bedding, course you will have to vary the thickness of the mortar slightly to take up variations in the level of your foundations.



B. *The metric bricks now in use are made to a single, standard size*

Advertising Arts

1 *To set out a simple project such as our barbecue, stretch a length of twine taut between stacks of bricks and then use it as a guide line*

2 *Before you mix any mortar, work out how many bricks need to be cut. The first step is to mark the cutting line, preferably with a gauge*

Cutting bricks

In order to achieve a proper bonding pattern, you will inevitably be faced with the task of cutting bricks. Start by setting the brick on edge, on a piece of harboard and mark a cutting line in pencil (fig 2). Use the edge of the bolster to convert this into a groove 1mm deep then position the bolster in the groove. Finally, keeping the bolster as near upright as possible strike it hard with the lump hammer (fig 3). If the brick doesn't split at the first attempt, do not worry—it will eventually.

To speed up the measuring and marking process, bricklayers use a marking plate—three pieces of wood, stuck together as shown in fig. 2 to give rebates of quarter, half and three-quarter brick sizes.

If you have a lot of bricks to cut, it is well worth making up a plate and cutting all the bricks before you begin laying.

3 *Holding the bolster exactly on the cutting line, strike it sharply to split the brick. A piece of hardboard underneath protects the patio*

Using the trowel

If possible, practise the knack of handling the trowel for at least 15 minutes before you start laying any bricks—it will save a lot of mess later on and greatly speed up the bricklaying process.

Arrange the mortar into a neat pile on one side of the spotboard. If you are right-handed, the left hand edge of your trowel as seen from above will be a straight edge. Use this to cut a section of mortar from the pile (fig. 4), keeping the blade of the trowel angled slightly towards you.

Roll the mortar down the spotboard towards you, smoothing it to form a sausage shape with tapering ends (fig 5). This section of mortar is known as a *pear*. To pick it up, slide the straight edge of the trowel under it and then up again in a sweeping movement (fig 6). Practise doing this until you can pick up the whole of the pear in one sweep.

4 *To trowel a pear of mortar, start by separating a trowel-size section from the heap on the spot board. Form it roughly into shape*

5 *Roll the pear down the spot board in a series of chopping movements. Practise until you can do this smoothly and quickly*

6 *Pick up the rounded pear by sliding the trowel sideways—slipping it under the mortar and up again in one movement*

7 *To start the first course, line up the bricks which will form the base of the main wall in a dry run. Make sure that they fit your plan*

8 *Taking the brick at one end of the run as your first marker, flick a pear of mortar into the exact position you intend to lay it*

9 *Before you lay the marker brick on top, flatten out the pear slightly and make a small depression so that the mortar will spread*

Marking your first course

Start by arranging the bricks which go to make up your main wall 'dry'—without mortar—along the setting-out line (fig.7). Adjust them until there is a gap of about 10mm between each one.

Take up the brick at one end and in its place, lay down a pear of mortar. Flick it off the side of the trowel to start with (fig. 8), then flatten it out to the area of a brick (fig. 9). Before you lay the brick on top, trowel a depression in the middle of the mortar to help it spread flat.

Use the spirit level to check the brick for level, making small adjustments to the brick with gentle taps of the trowel handle (fig.10). Stretch the level out along the dry run of bricks so that one end remains on the brick you have just laid. Lay the brick at the other end of the level in the same way as the first and check for level as before. Then stretch your spirit level back to the first laid brick and check to make sure that the two bricks are level with each other (fig.11).

Follow this by checking them both for line, with your level pressed against the side faces. When you are satisfied that they are in the right position, repeat the whole procedure again further on down the run, using the second, laid, brick as the level reference this time. As you stretch your spirit level down the run, make sure that the end which was on the second brick remains there.

Continue laying marker bricks until you reach the end of the dry run. You should end up with a series of laid, squared, level, marker bricks at intervals along the first course. They should be separated by a distance, centre to centre, approximately equal to the length of the spirit level. On a

10 *With the brick in place, use your spirit level to check it for true. Make small adjustments with gentle taps of the trowel handle*

11 *Lay your second marker brick at the other end of the spirit level. Once it is level, match it up to the level of the first brick as shown*

small project like the one on page 24, you will only need three marker bricks to span the first course. Make a final check to ensure that they are all level and in line with one another, then remove the intervening bricks.

Laying the first course

Start by stretching your setting-out line tautly along the edge of the marker bricks (fig. 12). Use the line as a guide for the positions of the intervening bricks. The procedure for laying them is as follows:

- lay down a pear of mortar
- flatten and indent it
- take up your brick, gripping it as shown in fig. 13
- draw off another piece of mortar, about the size of a cocktail sausage
- scrape it hard against one heel edge of the brick (fig. 13)
- do the same for the other heel edge
- lay the brick in position, against the adjoining one
- check it with the spirit level for level and line
- scrape off the excess mortar and return it to the spotboard

Turning a corner

On large projects, bricklayers use a builder's square (fig. A) to help them judge corners correctly. For small projects a spirit level will suffice. Having laid your corner brick, butt the level up against the heel of the end brick and then tap the corner brick into line (fig. 15).

Alternatively, you can use the 'three-four-five' method. Measure four units along your main wall and mark, then three of the same units along your corner brick, and mark. If the corner is square, then the diagonal measurement between the two marks must be five units.

Laying subsequent courses

Subsequent courses of brickwork are laid in much the same way as the first. But if you are using bricks with indents or *frogs*, allow a bit more mortar for each pear to fill these up. As you lay down a pear, make sure you cover the cross joint between the bricks below (fig. 16). If a bit of mortar slips down, simply replace it with more.

As you work on the second course, take particular care to ensure that the gauge is correct—if you lay your mortar to a depth of 12mm, this should flatten out to the required 10mm when a brick is laid on top. Be systematic with your checking: as work progresses, you will need to check constantly for level, line and plumb (with the spirit level on end) and also that the joints are of the ideal 10mm width.

12 *When you have laid all the markers, weigh down your line to touch them. Use the line to align the rest of the bricks in the wall*

13 *Scrape hard as you "butter" the end of an adjoining brick—otherwise the mortar will crumble and fall off as you place the brick*

14 *There is no need to check the rest of the bricks for level—just tap them into line so that they are level, but not quite touching*

15 *Judge small corners such as those in our barbecue project by holding the spirit level against the end brick as a straight edge*

16 *As you are laying your mortar for the second course, make sure that it completely fills in, and covers, each cross-joint on the first*

17 *With a brick laid on top, the bed mortar for the second course should be about 10mm deep This shows the stretcher bond*

Finishing the joints

Finishing the joints, half an hour after they are set, will improve the overall appearance of the project and protect the mortar from erosion.

For small projects, a *round tooled* finish is the most suitable. Bricklayers do this by scraping a special tool along the half-dry joints and then brushing away the excess mortar. But you can achieve almost as good a finish by rubbing over the joints with a piece of 12mm diameter rubber hose. Do the vertical joints first then the horizontal ones, giving priority to the latter.

Build a barbecue

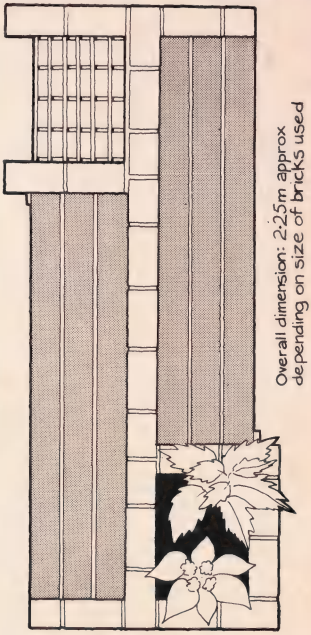
To build the barbecue you need about 300 standard size (metric) bricks, 2 bags of cement and 30kg of sand.

The seats shown are each made from 3 lengths of timber 1585mm x 75mm x 50mm, battened at either end then sanded and varnished.

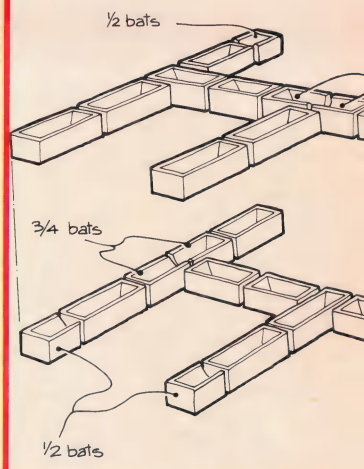
A simpler alternative is to use 2 1585mm x 140mm x 50mm planks for each seat, left to rest loosely.

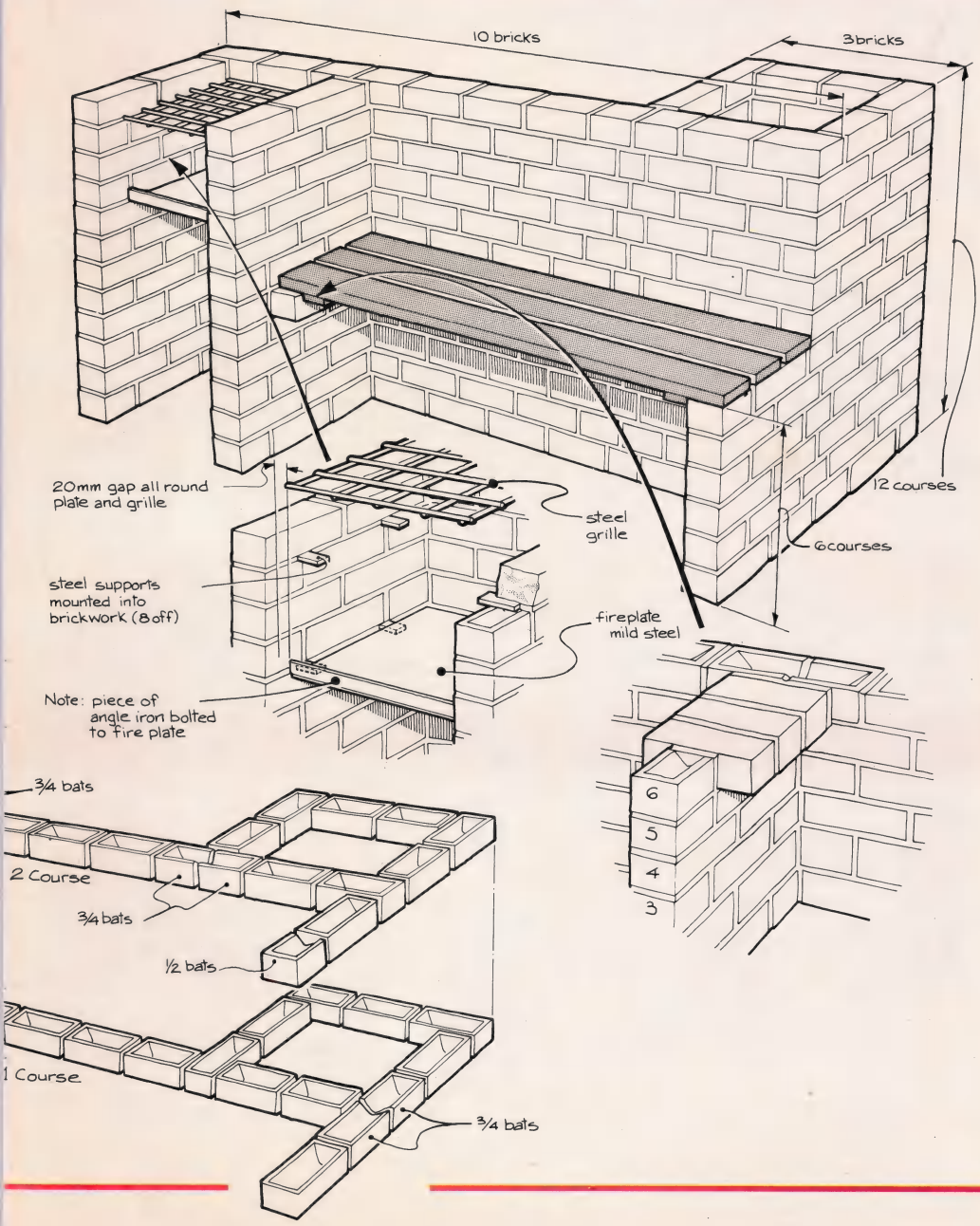
For the fireplate, use mild steel plate, about 450mm x 450mm x 6mm, with a piece of angle iron bolted to the front edge. Make the grille above from steel lattice of the same size. Allow a gap of 20mm all round between these and the surrounding brickwork.

Build supports into the bedding mortar to hold the plates in place. Fashion these from 25mm flat iron or 6mm mild steel dowel cut into 100mm lengths. Use 4 per plate, evenly spaced.

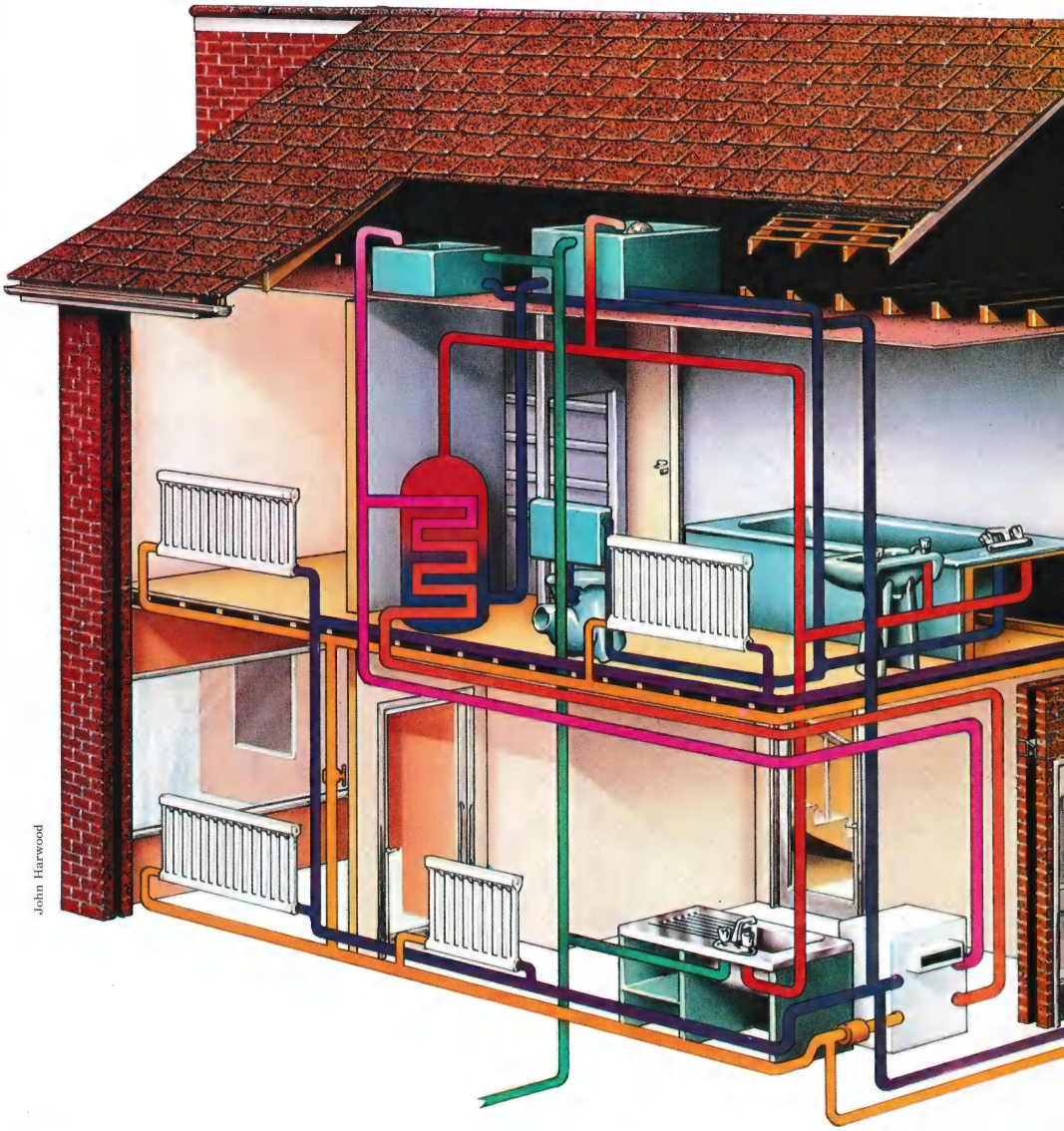


PLAN VIEW




10 bricks
3 bricks
20mm gap all round plate and grille
steel grille
12 courses
6 courses
steel supports mounted into brickwork (8 off)
fireplate mild steel
Note: piece of angle iron bolted to fire plate
6
5
4
3
¾ bats
2 Course
¾ bats
½ bats
1 Course
¾ bats

Understanding your water system



John Harwood

The layout of most water systems is a mystery to many householders. Get to know how the plumbing system works and you will be able to save on plumbing and emergency repair bills

Left: *A typical modern plumbing system incorporates two hot water loops for the hot water tank and the radiators. The water enters the house via the rising main and feeds the system from the supply tank*

Domestic plumbing systems, and the ways in which they work, often seem quite baffling. So when something goes wrong, there is always the temptation to call in a plumber, rather than venture into unknown territory.

In many cases, however, a visit from the plumber is an unnecessary expense. Although plumbing installations vary a great deal from house to house, all follow the same basic set of rules and can usually be sorted out with little difficulty.

Where the water comes from

Cold water comes to your house from the water authority mains via a smaller, service pipe. This pipe may have been installed specifically to serve your house or you may share it with a neighbour. Either way, it will be controlled by a water authority stopcock somewhere on the edge of your, or your neighbour's property. The stopcock is sunk below ground (usually about a metre) and is encased in brickwork, concrete, or a stoneware pipe to provide access. To mark the site, a small cast-iron casing is usually fitted at ground level.

From here, the service pipe runs to your house and becomes known as the rising main. At the point where it enters, a further stopcock—known as the consumer's, or house, stopcock—is fitted. This one is your own property and, because it controls all water entering the house, it is as well to know where to find it.

The most common place is under the kitchen sink, where a branch of the rising main directly supplies the kitchen cold tap with drinking water. The other most likely locations are under the stairs, or below floorboards immediately inside the front door.

The cold storage tank

After the branch to the kitchen cold tap, the rising main runs to a cold storage tank or cistern. The water pressure in the mains allows this to be mounted high up in the house, normally in the roof space. Older storage tanks are made of galvanized iron, which is both heavy and prone to rust. These have now been replaced by the lighter, more hygienic, plastic tanks which are maintenance-free.

The storage tank helps to iron out irregularities in the main supply and also provides an emergency reservoir if the supply is cut off.

The rising main delivers water to the top of the tank via the control of a ball-valve. At the base of the storage tank you will find the main water outlet. The stored water flows through here under the pressure of gravity and then branches off to supply the rest of your house's water requirements. These will include the lavatory, the bathroom cold taps and the hot water cylinder.

A stopcock is normally fitted somewhere near the outlet, so that you can turn off most of the water, but still leave your kitchen cold tap in operation to supply the family's needs while you are working.

The hot water supply

In household plumbing, cold water is converted to hot either directly or indirectly. Direct heating means that the cold water comes into direct contact with a heater—normally a boiler or an electric immersion heater—then flows straight to the taps.

With indirect heating—usually combined with central heating—the water heated by the boiler is itself used to heat up fresh cold water. In this system, the two hot water circuits are separate and heat is transferred from one to the other by means of a heat exchanger.

The hot water cylinder, a copper tank heavily insulated to guard against heat loss, is common to most hot water installations.

In direct systems, it houses the electric immersion heaters—if fitted—and acts as storage tank to keep your hot water supply as constant as possible. In an indirect system, the cylinder has the additional function of housing the heat exchanger.

The direct flow

The flow of water in both direct and indirect systems relies on the principle that hot water always rises above the cold water around it. So, in a direct system, the flow starts with cold water running to the base of the hot water cylinder.

If a boiler is fitted then the flow continues from the cylinder down to the base of the boiler. As the water is heated it rises out through the top of the boiler, up to the top (crown) of

the hot water cylinder and then on to the hot taps.

If immersion heaters are fitted instead of a boiler, the flow is greatly simplified. The water runs from the storage tank to the base of the hot water cylinder and is heated: it then rises straight out of the cylinder and on to the hot taps.

The great disadvantage of direct systems is that water, when it is heated above 60°C (140°F)—or 80°C (180°F) in soft water areas—deposits scale similar to kettle fur.

The scale can block up pipework and boilers alike unless adequate precautions are taken. These include keeping the water temperature down below the 'scaling point' and using scale-inhibiting additives in your cold storage tank.

The indirect flow

The easiest way of understanding an indirect hot water flow is to visualize two independent 'loops' of water. The first loop consists of the water used to feed the hot taps.

This flows from the cold storage tank to the base of the hot water cylinder, where it comes into thermal contact with hot water on the other loop (via the heat exchanger). As the water is heated, it rises out of the cylinder and on to supply the taps.

The other loop supplies the boiler, heat exchanger and—if fitted—the radiators. Here, fresh water flows to the base of the boiler from either the storage tank or from another separate tank, known as the 'expansion tank'.

Once in the boiler, the water is heated and then rises out to feed the heat exchanger and radiators. After the water has given up its heat, it flows back to the boiler to be heated again.

Because the water in this loop is hardly ever changed, the problems of scaling are greatly reduced. The first time it is heated, the water gives up its scale: from then on, it is unable to do further damage.

The expansion tank

The indirect arrangement works best when an expansion tank is fitted to supply the boiler loop. This makes the loop almost completely independent of the one supplying the hot taps.

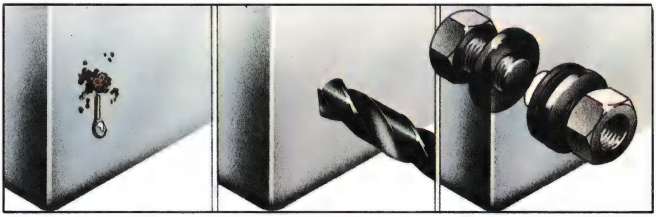
The tank is supplied with water from the rising main via another ball-valve. So, if the loop needs topping up with water because of a leak, the process is automatic. In practice, changes in the water level inside the expansion tank are barely noticeable.

When a pipe bursts

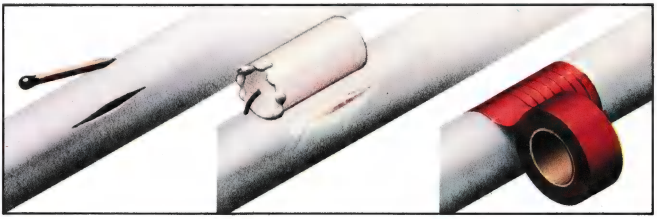
If you are unlucky enough to have a leak or a burst pipe, your first step must be to cut off the water supply. Do this as near to the offending area as possible so that inconvenience is kept to a minimum.

Hot water pipe or tap: Look for a stopcock on the pipe which runs into the base of the hot water cylinder or boiler. Before you turn it, make sure that all heating apparatus is off.

Cold water pipe or tap: Trace back along the relevant pipe until you come to a stopcock. If there are none between the burst and the cold storage tank, you will have to block the tank outlet. To do this, nail a cork slightly larger than the outlet hole on to the end of a piece of timber (fig C). By 'remote control', you can now insert the cork into the outlet and prevent further water from leaving the tank.



A. *A leak in the tank can often be fixed by plugging the hole with a bolt. Use a soft washer between the two metal rings for a watertight fit*



B. *Temporary repairs can be made to a split lead pipe by plugging the crack with a sliver of matchstick, waxing the plug, then taping firmly*

To guard against the build-up of high pressures in the hot water system, overflows or vents are fitted.

In a direct system, only one pipe is needed. This runs to the top of the cold storage tank, either from the crown of the hot water cylinder or from a branch off the hot water service pipe.

In an indirect system, an additional vent is installed at the top point of the primary circuit.

Turning off the hot water

Whatever your hot water system, the hot water which reaches the taps comes from the top of your hot water cylinder. It does so because of the pressure of the cold water entering the cylinder beneath.

So, if you cut off the cold water supply at the base of the cylinder, no further hot water will rise from the top. Most hot water cylinders have a stopcock for this purpose, fitted at the cold water inlet. Those that do not invariably have a stopcock somewhere on the pipe between the inlet and the cold storage tank. Before touching this stopcock make sure that all heating apparatus is turned off.

Wet central heating

Wet central heating, in which hot water is used to heat the house via a system of radiators, adds an additional complication to plumbing installa-

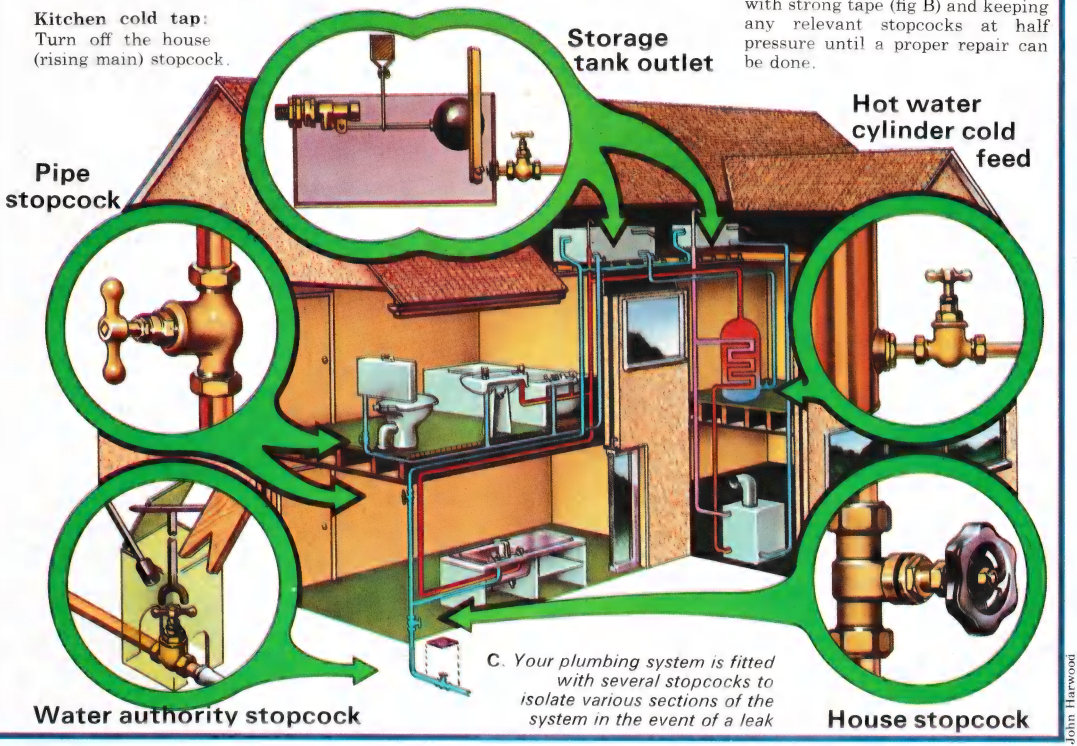
Should the outlet prove impossible to block, drain the tank instead. First tie back the ball valve to a piece of timber stretched across the tank (fig.C): this will stop fresh water from entering. Now, turn on your bath, or washhand basin cold tap, until the tank is fully drained.

Kitchen cold tap: Turn off the house (rising main) stopcock.

In the garden: If possible, turn off the water authority stopcock.

Leaking galvanized storage tank: A leak here will probably be due to a rust spot which has eaten its way right through the metal. Once you have drained the tank and tied back the ball valve, you can cure the leak by drilling out the rust spot and fitting a nut and bolt into the hole (fig A).

Burst lead pipe: A crack in a lead pipe can be temporarily stopped by ramming in a matchstick and then rubbing the area with candle wax. Follow this by binding up the repair with strong tape (fig B) and keeping any relevant stopcocks at half pressure until a proper repair can be done.



C. *Your plumbing system is fitted with several stopcocks to isolate various sections of the system in the event of a leak*

John Harwood

tions. But if you can imagine the radiators and their pipes as being part of the boiler 'loop' in a basic hot water system, the whole thing becomes easier to understand.

Some older installations work on the direct principle in which hot water heated by the boiler flows to the radiators as well as to the hot taps. Because this system is uneconomical and causes scaling, it has been replaced by indirect installations.

Here, the water which flows to the radiators is on a pump-driven loop like the one used to supply the heat exchanger. Consequently, it is always fairly hot and requires less heating, which in turn makes it far more economical than a direct system.

In some indirect systems, the water which supplies the boiler loop is drawn direct from the storage tank. But most incorporate a separate expansion tank to keep the loop independent of the rest of the water supply.

Radiator systems

The pipework used to supply the radiators may take one of two forms. In the simpler, one-pipe system, hot water flows from the boiler to each radiator in turn and then back to the boiler again. Although this cuts down the amount of pipework needed, it allows hot and cooled water to mix near the end of the run. Consequently, the last radiator in the run often remains cool however hard the boiler is working.

In the two-pipe system, the pipework is arranged so that cooled water leaving the radiators cannot mix with the hot water entering them. The radiators therefore heat up faster, as well as remaining at the same temperature.

Sizing of inward and outward piping in the radiator circuit is matched to the given radiator load. At the boiler a 28mm width supply pipe may be used, this reducing to 22mm at the branch-off point of each radiator bank. Tubing 15mm in diameter is then used to connect the first radiator, and to continue the supply run in the case of a two-pipe system.

Decorating with tiles

● Estimating quantities ● Types of tile ● Preparing the surface ● Getting the tiles square ● Cutting and shaping tiles ● Tiling around windows ● Tiling in awkward places

As coverings for walls, tables and working surfaces, ceramic tiles have several distinct advantages over other materials. As well as offering a superb range of colours, patterns and glaze finishes, they make a hard-wearing easy to clean, practical surface.

They also have a high resistance to both acids and alkalis and a permanent colouring, unaffected by prolonged exposure to sunlight or steam.

The one drawback to ceramic tiles is that they are brittle, making them slightly more difficult to work with than vinyl or cork.

Types of tile

Ceramic tiles come in a wide range of plain colours, patterns and shapes. The three most common sizes are 108mm square x 4mm, 152mm square x 6mm and 152mm x 76mm x 6mm but other sizes are available to order. Australian sizes are 100mm square, 150mm square and 200mm x 100mm. Mosaic tiles—group arrangements of small tiles on backing sheets—are among the other types available.

The field tile used for most tiling usually has lugs around the edges which butt against adjacent tiles and ensure an equal 2mm gap all round.

For edging and corner work, special tiles are available with either one or two rounded edges (fig. A). Border tiles, with two square, glazed edges can be used as an alternative.

Floor tiles are different in strength and suitability to ordinary wall tiles, so check with the supplier before use.

When tiling food preparation surfaces in the kitchen, you should always check with the manufacturer or retailer that the tiles are suitable for the purpose—some have a potentially toxic heavy lead glaze. Tiles used near heat sources such as cookers and fireplaces should be heat resistant or at least 9.5mm thick.

The basic tool kit

Cutting tools, adhesive and grout are readily available from any DIY shop.

You will need a simple wheel cutter or a scriber with a tungsten-carbide tip. A wheel cutter with breaker wings, for scoring and breaking in one action, costs a little more. A carborundum file is useful for smoothing down the edges of cut tiles.

Materials

Tile adhesive is available either in powder form, to which water is added, or else ready-prepared in cans: five litres will cover about 6m² on a good surface.

However, use a water resistant adhesive for areas around sinks, baths and showers and one which is heat resistant where temperatures are likely to be high, such as around cookers and fires.

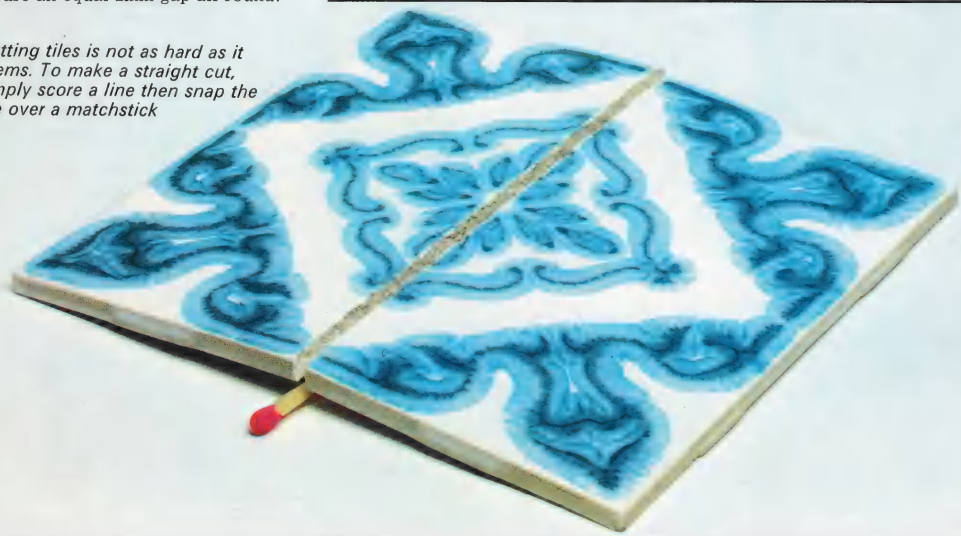
Grout is a cement-based paste which is rubbed into the gaps between tiles to provide a neat finish. As a rough guide 500g of the powder, mixed with water to a fairly stiff consistency, will

How many tiles?

To estimate how many tiles you will need for a wall or worksurface, measure the length and height in metres then use our formula

108mm square tiles: Length x Height x 86 = No. of tiles
152mm square tiles: Length x Height x 43 = No. of tiles
152mm x 76mm tiles: Length x Height x 86 = No. of tiles

If necessary, add on the required number of special border tiles or subtract tiles to allow for fittings. Add on an extra 5 or 6 tiles to cover breakages.



Cutting tiles is not as hard as it seems. To make a straight cut, simply score a line then snap the tile over a matchstick

Gavin Cochrane

grout about $2m^2$ of small tiles or $4m^2$ of larger ones.

A non-toxic grout should always be used on tiled food preparation surfaces and a water resistant grout around sinks, baths and showers.

Preparing the surface

The quality of any tiling job is largely dependent on the surface to which the tiles are fixed. This should be firm, level, clean and dry with unwanted fixtures such as hooks and screws removed beforehand.

Most surfaces require only a little preparation before they are tiled. A few, though, need more extensive treatment: in such cases, think carefully before you commit yourself to ceramic tiles.

Plaster: Minor bumps and cracks can be filled with a proprietary plaster filler. The entire surface should then be given a coat of plaster primer, to provide a non-porous base for the adhesive. If the surface is very uneven, it should be replastered and left for a month before being sealed and tiled.

However, rough surfaces can often be relined with plywood, chipboard or plasterboard. To do this, you will need to plug and screw wood battens—25mm x 25mm will do—to the wall at regular intervals. Make sure that each batten is vertical, using wood chips to pack any gaps between the wood and the old wall surface.

Before screwing your panelling material to the battens, give each strip a thorough coat of wood sealant. As you secure the panels, plan your work so that adjacent ones butt up against each other over the centre of a batten.

Wallpaper: On no account should tiles be laid on to wallpaper. Strip the wall back to the bare plaster, then fill and level as described above.

Painted walls: Providing these are smooth and firm, tiles may be applied direct. But flaking or rough paint should be partially stripped with medium glasspaper and brushed clean.

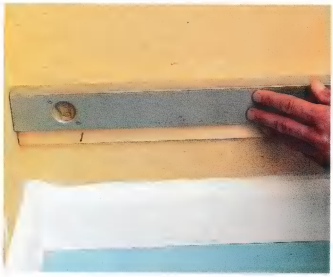
Timber walls: These must be sanded or planed level and treated with wood primer before the tiles are applied.

Existing ceramic tiles: The ideal tiling surface, providing the tiles are clean, firmly fixed and not chipped.

1 *Make a pencil mark a tile's height from the top edge of the skirting board. This will show you where to draw the baseline*

2 *Drawing the baseline. The spirit level ensures that the baseline is level and acts as a straight edge for marking the line*

3 *Pin the batten along the bottom of the line to provide a level base for tiling. The bottom row will be filled in later*



4 *Check the batten with the spirit level to make sure it is horizontal. If it is not, it will have to be unpinned and re-adjusted*

5 *Mark tile widths along the batten to give an even cut at each end of the wall. This ensures the symmetry of the tiled wall*

6 *Use the spirit level to draw the vertical line at the last tile mark. The line acts as a guide to keep the tiling square*

BMV

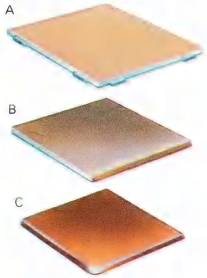
Constructing a baseline

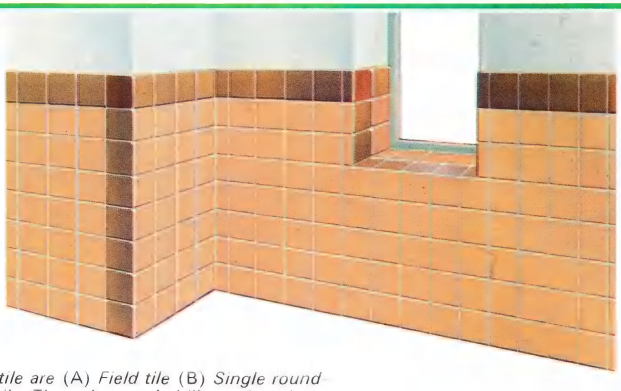
Before you start tiling you will need a horizontal baseline from which to work—floors and skirting boards are not suitable, as they are seldom completely level and can throw the tiling out of true.

To draw a baseline, measure the height of a tile from the floor or skirting board and make a mark (fig. 1). Using the spirit level as a straight edge, check for level and draw a line through this mark (fig. 2).

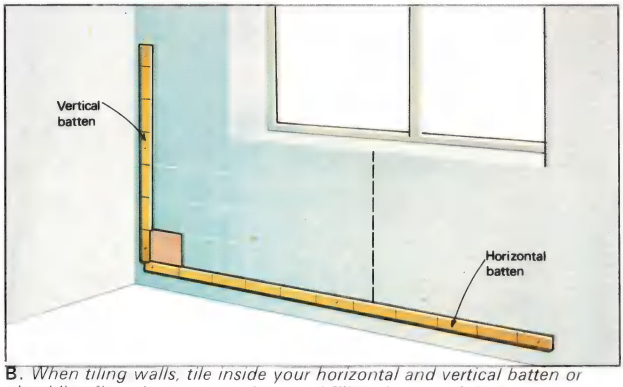
Finally, pin the top edge of a batten along the line so it forms a level base, right along the length of the surface to be tiled (fig. 3).

Late, when you have tiled above it, you can remove the batten and fill in the space below (fig. 9). The tiles here may have to be cut or trimmed.





A. *The three most common types of tile are* (A) *Field tile* (B) *Single round edged tile* (C) *Double round-edged tile. The colour coded illustration shows where each type is used*

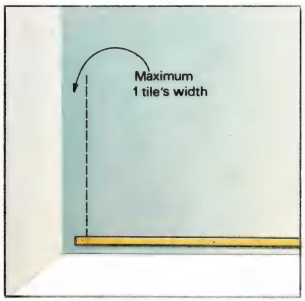


B. *When tiling walls, tile inside your horizontal and vertical batten or plumbline first, then remove them and fill in the rest of the space.*

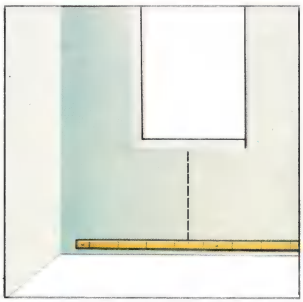
Tiling around windows

Arrange the tiles to achieve a good visual balance with cut tiles of equal size on each side of the window. When tiling recessed window sills, fit any cut tiles at the back and in the corners where they are not so obvious. Make sure that patterns are kept continuous, and finished surfaces smooth, by placing the spacer lugs of any cut tile against those of the adjacent tile.

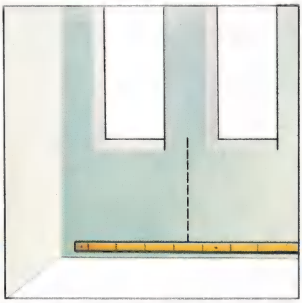
Use round-edged tiles at the front of sills, lapping them over the edges of the wall tiles to form a smooth, rounded edge.



C. *Normally the start line is drawn one tile's width away from the edge of the wall with a plumbline*



D. *When tiling around a window, work from a line down the centre of it—not the edge of the wall*



E. *On a wall with two windows, the line you work from should run midway between the two*

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Marking a side line

To keep the tiles exactly square to the baseline, you will also need a vertical line at one side of the surface. Find the centre point of the batten and mark out the tile widths along either end of the wall. Draw your line where the last full tile ends on the lefthand side, using the spirit level—or a plumb line—to give you an accurate vertical line (fig.6).

Fixing the tiles

Begin tiling at the intersection of the horizontal batten and the vertical line (fig. 7), filling in the bottom row and working upwards.

Adhesive should be applied thinly to the wall over an area of not more than $1m^2$ at a time. If applied to the backs of the tiles themselves, the finished surface could be uneven. If adhesive is applied over a greater area, some may dry before it has been tiled over. Drive the serrated edge of the spreader over the adhesive, forming ridges to provide good suction and adhesion.

F. *Mark cutting lines on tiles in felt-tip pen—offering them up to the space they are to fill*

Press the tiles firmly into place without sliding them, wiping away any adhesive which squeezes onto the surface of the tiles with a damp cloth. The alignment of the tiles should be checked with the spirit level on completion of every three or four rows.

When the tiles have set, the corner tiles may be fixed and the batten removed before filling in the bottom row—butter their backs with adhesive and fit them firmly home. Always fit cut tiles so that the spacer lugs—that is the uncut sides—faces those of the adjacent tile (fig.9). For tiles without lugs, use matchsticks as markers between tiles to ensure even spacing.

Butt the spacer lugs of the tiles on the adjacent wall against the surface of the cut corner tile at right angles to it—thus allowing a grout line to run down the junction of the two walls. If the tile has no lugs, space it with matchsticks.

Cutting and shaping tiles

Straight cuts in ceramic tiles can be made either by scoring and snapping with a standard tile cutter (figs.10 and 11) or by scoring and breaking with an Oporto tile cutter (fig.12).

Start off by offering the tile to be cut up to the space on the wall, positioning it so that it overlaps the

7 *Fix the first tile at the intersection of the batten and the vertical line. Tiles should be pressed firmly home without sliding*

8 *When fitting cut tiles into corners and awkward areas, adhesive should be applied to the backs of tiles rather than to the wall*

9 *When the rest of the wall has been tiled, the batten can be removed and the bottom row of tiles cut and fitted into place*

10 *Use a tile cutter to score through the glazed surface of a tile. The try square ensures that the score mark is straight and even*

11 *Place a matchstick under the score mark on the tile. Exert downward pressure and the tile should snap cleanly along the mark*

12 *An alternative method of cutting tiles is with the Oporto cutter. The tile is snapped by breaker wings.*

BMV

adjacent, fixed tile. Mark off the overlap on the tile with felt-tip pen, on the reverse side first, then the glazed side, then the edges.

With the tile back on the bench, convert these marks to a continuous cutting line. Score this line, using a try square to guide you, then either cut the tile with the Oporto cutter or snap it on the bench, over a matchstick.

Notches and curved cuts must be 'nibbled' by hand with a pair of pincers (fig.13). In the case of curved cuts, make a straight cut first as near to the curve as possible—the tile will snap if you attempt to pincer out larger areas.

The guidelines for curved cuts can be drawn in either by eye, or—more satisfactorily—with a cardboard template. Trim the template to shape in situ then transfer it to the tile and draw around it in felt-tip pen.

Pipes present some of the trickiest tiling problems. The safest way to tile around them is to cut the relevant tile in two and to cut a semi-circle out of each half.

All cuts in ceramic tiles look neater and more professional if they are smoothed afterwards with a carborundum file or block (fig 14).

Tiling around fitments

Where the fitment runs the length of a wall—a bath or kitchen unit for example—treat the top edge as you would a floor or skirting board. Fix a horizontal batten along this edge and leave it in place while you tile the wall above. When the tiles are dry, remove the batten and tile down to the edge with tiles cut to fit.

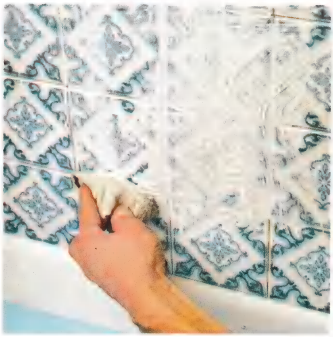
Where the fitment is in the middle of a wall—such as a basin or wc—tile around it as closely as you can with whole tiles, then fill in the spaces with cut tiles when the rest of the wall is completed.

Grouting

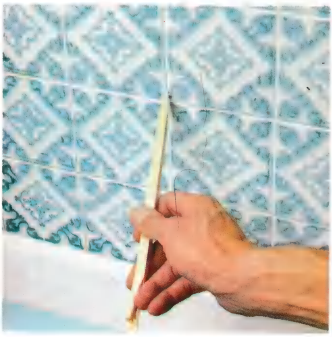
When the tiling is finished, leave it to set for 12 to 24 hours, then rub grout firmly into the tile joints with an old sponge, squeegee or cloth (fig.15). Remove excess grout with a damp sponge: when it has almost set, run a blunt stick across the joints to leave a neat finish (fig.16). Allow the grout to dry and then give the tiles a final polish with a soft, dry cloth.

13 *For a shaped cut, score the area that is to be removed then nibble out small pieces of the tile with a pair of pincers*

14 *When the shape has been nibbled out of the tile, smooth off any unevenness on the cut edges with a carborundum file*



15 *Once the tiling has been completed and the adhesive has set, rub grout firmly into the joints with a sponge or piece of rag*



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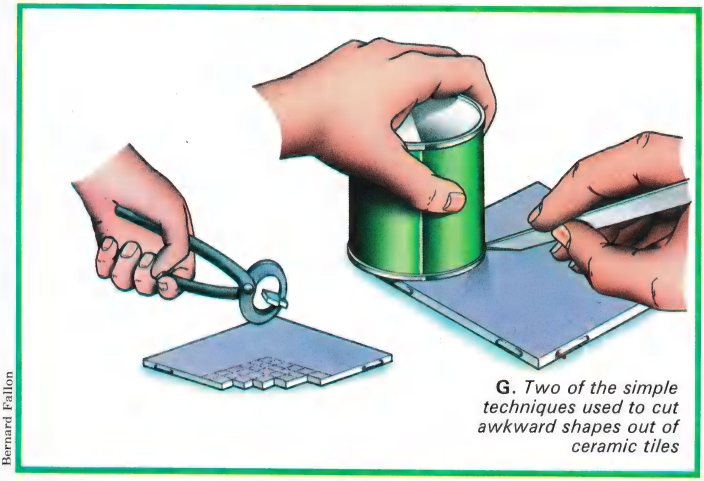
16 *When the grout is almost dry, draw a stick with a round point along the joints to give a neat appearance to the finished tiling*



Bernard Fallon

G. *Two of the simple techniques used to cut awkward shapes out of ceramic tiles*

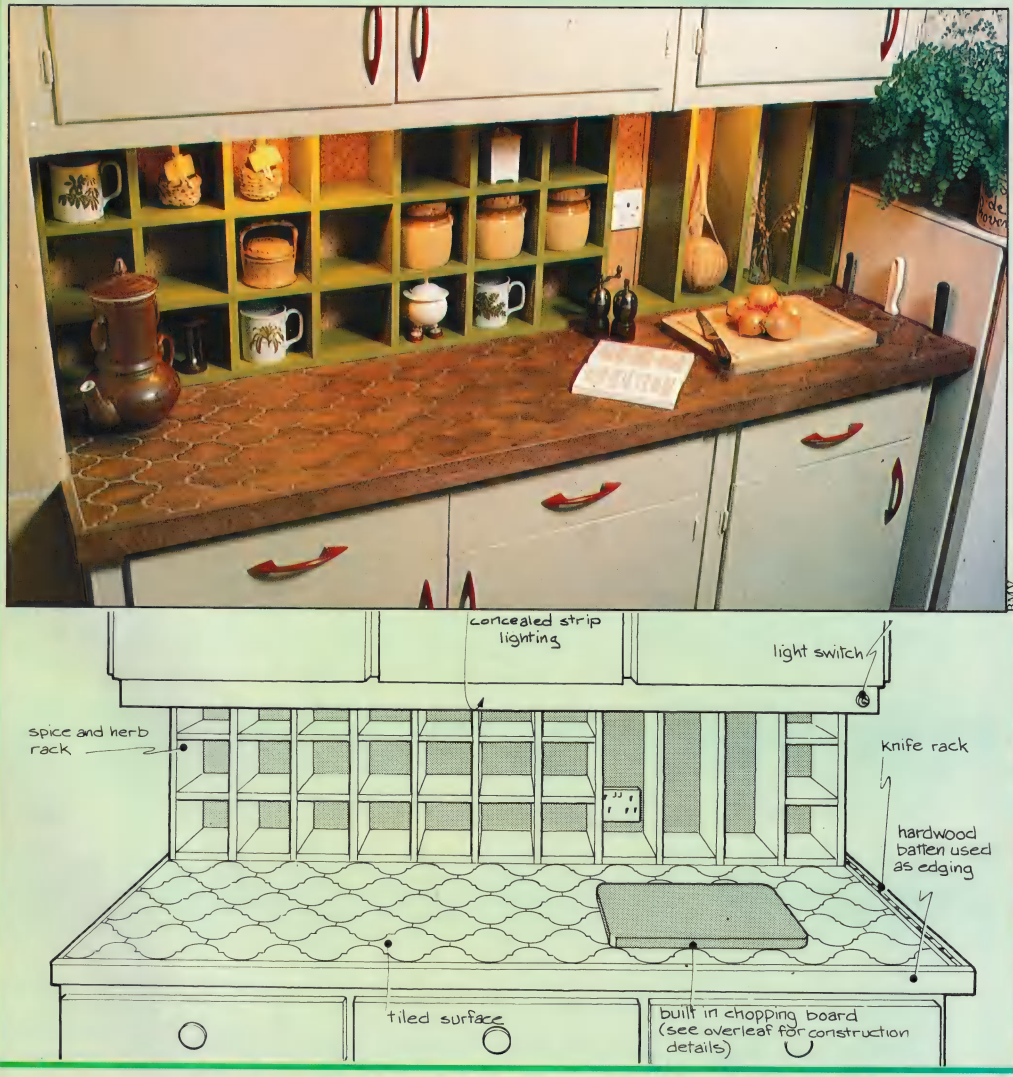
Stylish tiled worktop

You can brighten up that old shabby work top in the kitchen simply and inexpensively by tiling over the existing surface and smartening up the space below the cupboards with shelves and cork tiles on the wall.

A couple of strip lights installed behind the cupboard overhang provide a good working light across the tiled surface and concentrate light where it is most needed, making the work surface free from shadows.

Be sure to use unglazed tiles as constant use will destroy the surface of the glazed variety. Take care, too, to use a non-toxic grout.

Follow the designs overleaf for the basic construction details plus hints on how to build-in a knife rack and chopping board as part of the worktop.



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mount two striplights behind valance to illuminate work surface

use unglazed tiles for work surface as glazed tiles may crack in use

tack edging to original worktop under the tiles

edging should match colour of tiles. sand and varnish when tacked into position

use battens to raise chopping board above level of tiles the battens hold the board firmly in the tile recess and allow easy removal for cleaning

knife rack is formed from an extra batten and a series of blocks which create spaces for the knives

Where to buy it—UK

Lights for living rooms Pages 4-9
Downlighters from John Lewis Partnership Ltd., Oxford St., London W.1.; other larger department stores and specialist lighting shops.
Parchment for cube lamps from Amari-Plastic Ltd., Shenstone Trading Est., Bromsgrove Rd., Halesowen, W. Mids. and many larger stationers.
Custom-built bedhead Pages 10-15
Foam from Latex Cushion Co Ltd., Kingbury Rd., Erdington, Birmingham 24; The Gill Latex Cushion Co Ltd., 20 Swan Street, Manchester M4; Transatlantic Plastics, 45 Victoria Road, Surbiton, Surrey.
Perspex from Transatlantic Plastics; Visijar Plastics Ltd., Gorse Street, Chadderton, Oldham, Lancs.
Facelift for furniture Pages 16-19
Furniture stripping by Strippers, 10 Church Road, Teddington, Middx. Materials from W. F. Jenkins & Co Ltd., Tariff Rd., London N17 0EN.
Decorating with tiles Pages 30-36
Ceramic tiles from Pilkington's Tiles Ltd., Clifton Junction, Manchester M27; Opporto Ceramics Ltd., Wortley Moor Rd., Leeds LS12 4JA; H&R Johnson, Turnstall Rd., Stoke-on-Trent ST6 4JX
Information and advice on UK-made ceramic tiles from the British Ceramic Tile Council, Stoke Road, Shelton, Stoke-on-Trent.

Australia

Household plumbing systems in Australia differ slightly from those described on pages 26-29. Australian law requires that all plumbing work must be carried out by a qualified plumber.
Where to buy it:
Downlighters: DE & T Lighting, 3 Stanley St, Auburn, NSW. Parchment paper: Swains Pty Ltd, 73 Campbell St, Surrey Hills, NSW. Foam rubber: Clark Rubber, stores throughout Australia

Acknowledgements

We wish to thank the following for their help in supplying designs/materials/labour in this issue of 'The Knack'.
Decorative Lighting Association, 27 John Adam Street, London, WC2N 6HX.
Advertising Arts, 5 Nene Quay, Wisbech, Cambridgeshire PE13 1AQ.
BDA Training Services Ltd., South Boundary Road, Kirkby Industrial Estate, Kirby, Merseyside L33 75F.
Stanley Tools Ltd., Woodside, Sheffield S3 9PD.

Making your own stencils

You can use the designs on the overleaf page to make your own stencils (see also page 19). Transfer the individual motif you require onto tracing or greaseproof paper. Shade around the edges with a soft pencil and then turn the design face downwards onto a sheet of stencil paper—available from craft shops—and go around the edges again with a sharp pencil. You should then be able to re-draw your design which has now been imprinted on to the stencil paper.

To cut the motif, choose a stable work surface and protect it by placing the stencil over a board or a piece of thick card.

Stick the stencil paper onto the board with masking tape or drawing pins to hold it firm, then with a scalpel or craft knife cut carefully around the design. Always cut away from your fingers in case the knife slips. Leave a border of about 50mm around the design or the paint may smudge onto the woodwork. The stencil is now ready to be applied to the surface.

First make sure the work surface is clean by rubbing down with meths or white spirit to remove any surface grease. You may want to sand down and re-paint old wood, or stain untreated wood. It is a good idea to polyurethane untreated wood to prevent the stencil paint from soaking in and bleeding through the grain, giving the patterns a fuzzy appearance.

You will need a selection of basic colours in household gloss or model makers' enamel paints. Car spray paints are also very effective, but must be used carefully—the whole piece of furniture must be masked to prevent excess spray drifting onto unmasked areas.

Cardboard makes an excellent palette on which to mix the paints, but an old plate will do just as well. Pour a little of the required colours onto your palette and mix them together with an old kitchen knife.

It is best to use a proper stippling or stencil brush to paint the designs. Stick the stencil flat in position with masking tape and apply the paint by dabbing the brush over the designs and working paint right into the corners of the stencil design. Take care, though, not to splay the bristles of the brush under the stencil paper or your designs will have rough edges and may need retouching.

Try to keep a separate brush for each basic colour. Pieces of foam rubber can be used instead of stippling brushes but you must be very careful not to smudge the paint layer by pressing too hard. If smudges do occur, wipe them off immediately with a rag, lightly soaked in white spirit.

You can grade your colours by using heavy pressure for the overall shade and then a light pressure of a slightly different colour at the edges of your stencil, thus creating a three dimensional effect.

Wait until each design is dry before stencilling an overlapping motif to avoid smudging.

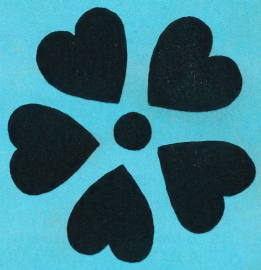
Clean each stencil after use by placing it on newspaper and wiping lightly with a rag dampened with white spirit.

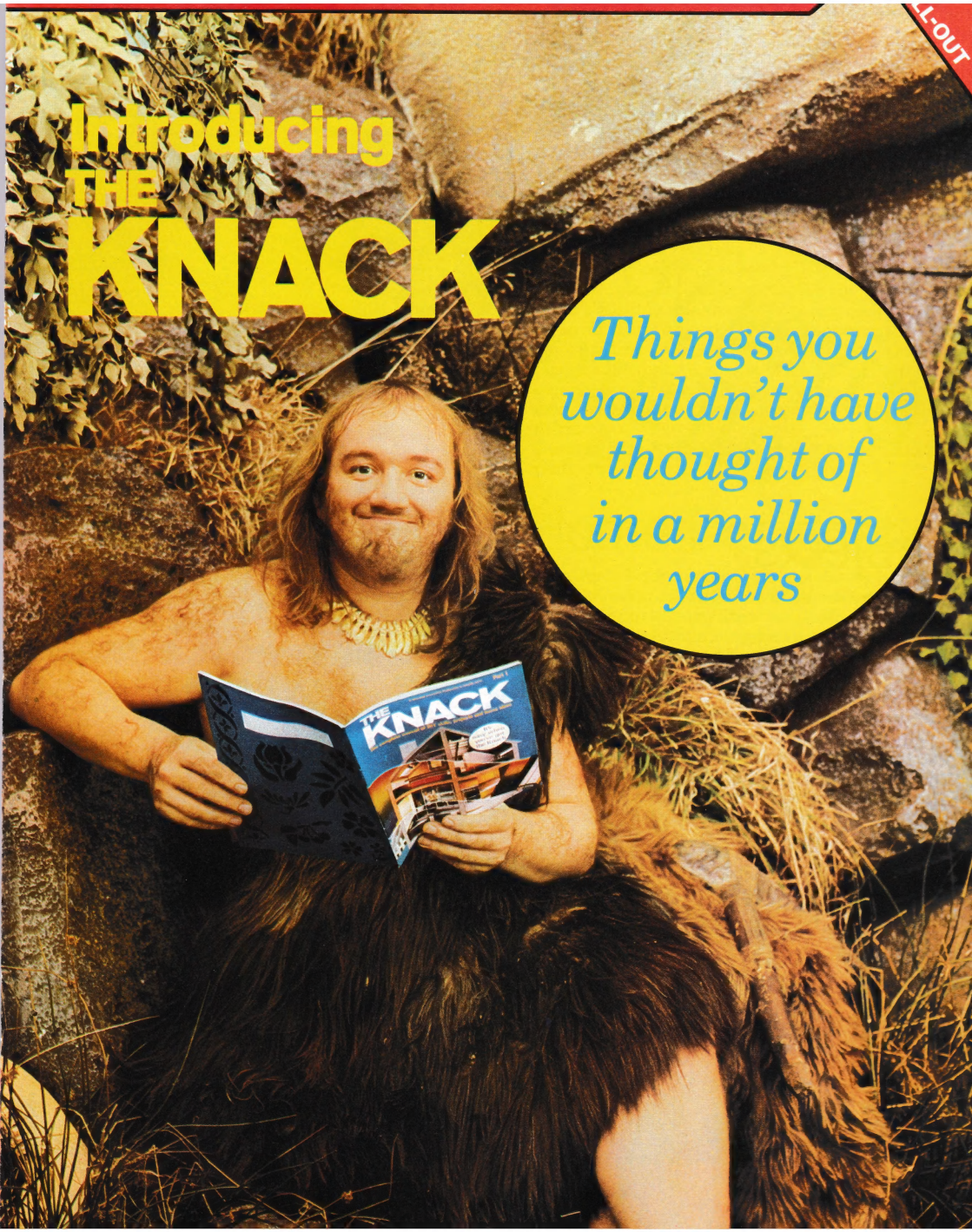
You can stencil straight lines and borders by using parallel strips of masking tape, leaving the required gap to be filled in with paint.

Always protect your finished work with at least two coats of polyurethane. This comes in Matt, Silk and Gloss finishes and must be left to dry for at least 24 hours between coats. Floors will need several extra coats of varnish to protect the designs.

STENCIL PATTERNS

The patterns on this page can be used to create your own personalized designs on any varnished or painted surface. Chests of drawers, wardrobes, floors, walls are all suitable for stencil treatment and by combining these designs, or even making up your own you can brighten up almost any piece of furniture. When you have cut out your stencils (see instructions inside the back cover) lightly chalk the chosen designs in position to get an idea of the layout of the finished pattern.

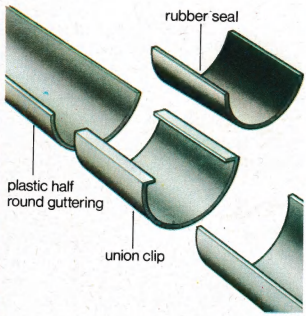



Introducing
THE
KNACK
Things you wouldn't have thought of in a million years
THE KNACK

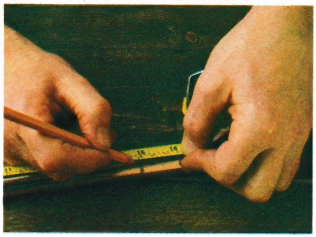
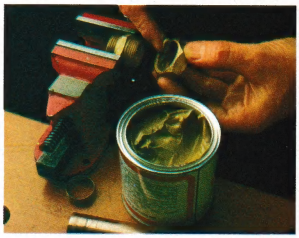
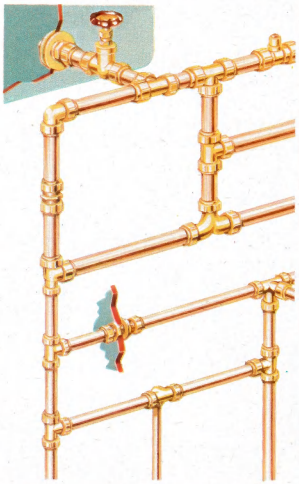
Repairs and renovations

Maintenance and repairs are part of the upkeep of any home and The Knack gives you a special section on all those jobs which can cost so much if you call in outside help. It provides a complete reference to handling emergency repairs—plus tips on avoiding future problems.

All the special techniques you need for just about any repair job are covered in simple step-by-step guides, with plenty of detailed instructions and tips—so you can get the job done as fast as possible.



The skills courses

The eight skills courses cover all the DIY skills you are likely to need. Each course has been carefully structured to take you through all the important basic techniques in a logical order. Each technique is laid out in detailed, step-by-step sequences with tips to make the work easier and faster.

You can put your new found skills to work right away. With each new skill introduced, there is a practical project specially designed to make the most of the techniques covered in the course so far. The working instructions for the projects are in the form of clearly set out diagrams and annotation so you can see exactly what is going on at a glance.